

## — SALES STATISTICS —

### World Sales of Household Units by Nema Members Total 172,758 in January

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for January 1937: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Co., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Uni-

versal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

SALES FOR JANUARY, 1937					
Lacquer (Exterior) Cabinets Complete		Domestic		Canadian	
Quantity	Value	Quantity	Value	Quantity	Value
1. Chest	157	7,561	17	835	100
2. Less than 3 cu. ft.	68	4,104	17	979	200,097
3. 3 to 3.99 cu. ft.	3,797	220,072	663	43,440	158,348
4. 4 to 4.99 cu. ft.	19,557	1,268,396	500	39,405	129,098
5. 5 to 5.99 cu. ft.	43,428	3,335,131	210	16,271	80,267
6. 6 to 6.99 cu. ft.	49,577	4,213,124	113	11,432	40,770
7. 7 to 7.99 cu. ft.	16,766	1,676,217	7	769	20,199
8. 8 to 8.99 cu. ft.	4,869	535,241	.....	.....	.....
9. 9 to 9.99 cu. ft.	.....	.....	.....	.....	.....
10. 10 to 10.99 cu. ft.	.....	.....	.....	.....	.....
11. 11 to 11.99 cu. ft.	.....	.....	.....	.....	.....
11. Total Lacquer	138,219	11,259,846	1,527	115,131	8,965
Porcelain (Exterior) Cabinets Complete					
12. Up to 4.99 cu. ft.	276	21,164	2	168	25
13. 5 to 5.99 cu. ft.	6,578	572,083	12	1,041	445
14. 6 to 6.99 cu. ft.	7,187	707,168	9	883	141
15. 7 to 7.99 cu. ft.	4,178	449,026	4	453	166
16. 8 to 8.99 cu. ft.	2,007	251,446	4	488	122
17. 9 to 9.99 cu. ft.	110	19,188	.....	.....	.....
18. 10 to 10.99 cu. ft.	29	7,006	.....	.....	.....
19. Total Porcelain	20,455	2,027,081	31	3,033	970
20. Total—Lines 11 and 19	158,674	13,286,927	1,558	116,164	9,935
21. Separate Systems	400*	25,770*	167	5,595	559
22. Separate Household Evaporators	1,143	11,063	9	160	1,113
23. Total—Lines 20, 21, 22	159,417	.....	1,724	.....	11,607
24. Condensing Units	1,010	50,606	29	1,876	198
25. Cabinets—No Systems	176	8,234	.....	.....	35
26. Total Household	.....	\$13,331,060	.....	\$123,795	.....
27. Total	.....	.....	.....	.....	\$786,340

\*Includes sales and credits reported by more than one company.

### Georgia Power Plans 3-Year Program To Build Up 'Small-Use' Customer

ATLANTA—A new three-year program of "selective selling," concentrating all load-building and merchandise sales efforts on the small-use customer, has been decided upon by officials of Georgia Power Co. as the most advantageous way to increase the utility's current load in the near future.

For residential customers, this small-use group consists of those whose monthly consumption averages 50 kwh. or less. Approximately 45% of Georgia Power's 140,000 residential customers fall in this classification.

If the utility accomplishes its aim during this three-year drive, the beginning of 1940 will find only 9% of Georgia Power customers using 20 kwh. and less; the number of customers using from 50 to 100 kwh. increased from 11 to 27%; and an average per-customer consumption of 150 kwh.

Specially selected, specially priced

merchandise will be used in the solicitation of the small-use customers. These products and their prices will be designed to meet competition and to overcome sales resistance due to prices beyond the spendable income of this group.

The company emphasizes the point that the sale of one kwh. to a customer using under 65 kwh. per month brings in more than three times the gross revenue of the sale of the same kwh. to a customer using from 65 to 200 kwh. monthly. On this basis, an I.E.S. lamp (using 9 kwh.) sold to the small-use customer brings in as much net revenue as an electric range (using 125 kwh.) sold to the large-use consumer.

Home service workers will play their part in the new campaign by devoting more attention to the small-use customers. New quotas have been set up on a revenue basis, as this method will more accurately reflect the results accomplished by the home service division. The girls of this division will contact every range and refrigerator owner who uses her equipment only part of the time, in an effort to get this group of customers to make greater use of their appliances.

Home service work in regard to rural customers will be confined, for the present, to seeing that these customers have adequate wiring, properly lighted homes, and useful small appliances. Major appliance promotion in this field will come later.

As rural customers are notably small kwh. users, every effort will be made to increase the consumption on the utility's 3,028 miles of rural lines. The 1937 budget calls for construction of 635 additional rural line miles, and this, together with the line mileage under consideration by rural cooperatives, is expected to make 1937 the greatest rural electrification year in Georgia's history.

The power sales division of the utility will concentrate on the sale of service to retail and commercial power, air-conditioning, and industrial heating customers with an average rate of approximately 2.25c.

A somewhat indirect method of sales procedure had to be worked out by the commercial and industrial lighting division for their part of the new load-building program. A small commercial user cannot be sold 10 kwh. right off the bat—he has to be built up a little at a time, and become accustomed to the idea gradually. Therefore, selling him a 100 or 200-watt I.E.S. lamp for the desk in his store breaks the ice and arouses interest in brightening up the rest of the place.

Eventually the customer may become interested in a complete lighting job for his whole establishment.

Georgia Power's selective selling program fits in with the company's policy of employe sales, for a great many of the sales made by employees are to small kwh. users. Division and district managers will constantly remind employees to "ask customers to buy."

### Bagg Heads Kelvinator Eastern Laundry Sales

DETROIT—Appointment of C. K. Bagg as manager of Kelvinator laundry equipment sales for the eastern region was recently made by V. J. McIntyre, sales manager of Kelvinator's laundry equipment division.

Mr. Bagg joins Kelvinator after nine years' experience with the Nineteen Hundred Corp., manufacturer of washing machines and ironers, Binghamton, N. Y.

### Norge Campaign Breaks In 125 Key Cities

DETROIT—Newspapers in 125 key cities of the United States last week carried insertions launching the 1937 Norge advertising program, which, according to company officials here, will feature wide use of newspaper, national magazine, trade, and business paper space, as well as radio broadcasts and outdoor advertising.

In addition to full page color insertions in newspapers, and national magazine advertising, the campaign will include full page color layouts in *American Weekly* and *This Week*.

Starting March 15, a nation-wide radio campaign consisting of 15-minute transcription programs, featuring famous radio orchestras and swing bands, will be broadcast under Norge distributor control.

Promotion material prepared for dealer use includes a full length mo-

tion picture "The Unwritten Story," telling the Norge product story, newsreels of Norge home appliances produced in 16 mm. and 35 mm. sizes, and a series of 12 technicolor "minute movies" stressing individual features of Norge appliances.

Following the presentation of the Norge line to dealers through a series of regional conventions held throughout the country early in January, shipments of Norge appliances for that month were 47% ahead of those for the same month in 1936.

### January Refrigerator Taxes Total \$392,886

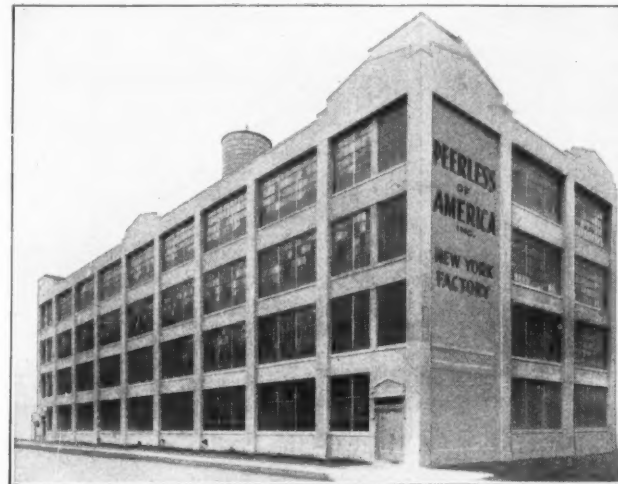
WASHINGTON, D. C.—Excise tax collections on mechanical refrigerators during January totaled \$392,886.11 as compared to \$210,143.58 during the same month last year, according to reports from the Bureau of Internal Revenue.



CHICAGO

### Three PEERLESS FACTORIES

Three factories, located to serve every section of the United States rapidly, efficiently, and at a substantial saving in transportation charges. The chances are ten to one that Peerless can serve you better. There's a Peerless factory near you.



NEW YORK

### DON'T MISS THIS NEW CATALOG

In addition to the most complete line of low side equipment Peerless has ever offered, this Anniversary Catalog contains valuable engineering information that you will use every day.

If you have not yet received your copy, write or wire the nearest Peerless Factory at once.



LOS ANGELES

### New Unit Cooler Line Featured By Development of "Synchro-Fan" Control

The Peerless "Synchro-Fan" Unit Cooler is an outstanding development in commercial refrigeration. Exclusive with Peerless (and fully covered by U. S. patents), the "Synchro-Fan" Control, together with the additional coil surface in Peerless Unit Coolers eliminates much dehydration and loss of weight in stored products. "Synchro-Fan" places forced convection units on an efficiency level comparable with natural convection coolers.



The fan motor is synchronized with the compressor and runs at normal speed during compressor operation. However, when the compressor cuts out, the fan motor continues to turn but at slower speed. Thus, circulation in the cooled compartment is maintained and air stratification prevented. Additional coil surface in Peerless Unit Coolers eliminates excessive moisture condensation common to other makes.

**PEERLESS of AMERICA, Inc.**  
ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE CO.

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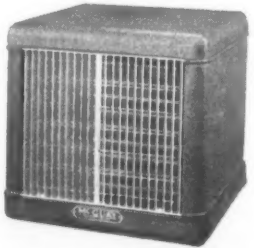
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For direct expansion refrigerants; also available as combination cooling and heating units, where cold water or brine is used as the cooling medium, and where steam or hot water as the heating medium . . . The ideal simplified cooling unit . . . Precision built! Numerous sizes with capacities to fit any requirements.

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**McQUAY, Inc.**  
MINNEAPOLIS, MINNESOTA



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## Summer Cooling Need Recognized At Oil Burner Exposition

**Term 'Air Conditioning'  
Finds Wide Popularity  
Among 80 Exhibitors**

By F. O. Jordan

PHILADELPHIA, March 16—Opening last night to a house well-filled with "first nighters," the National Oil Burner and Air Conditioning Exposition held here under the auspices of the Oil Burner Institute, marks a decided forward step in the growth of air conditioning and refrigeration, because the proven popularity of cooling in the home at last has forced its recognition by the manufacturers of heating equipment.

Even the words "and air conditioning" which have been inserted into the title of the exposition, is indicative of this change of heart, while no less than four exhibitors use actual cooling equipment itself in addition to their appropriation of its magic name. The Oil Burner Institute, of which all members must be active or associate members, is a manufacturers' organization whose active members are grouped as Domestic Burner Members, Industrial Burner Members, and Distillate Burner Members, and whose associate members include Accessory Equipment Manufacturers, Heating Industries, Dealer Associations, and others.

The total number of exhibitors is approximately 80, of whom approximately 30 are oil burner manufacturers.

The four exhibitors who include refrigeration in their exhibits are Timken Sile Automatic, Utica Radiator Co., The Herman-Nelson Co., and the General Electric Co.

The Timken all-year air conditioning exhibit consisted of down-draft McCord direct expansion cooling and dehumidifying surfaces, refrigerated by a 3-hp. Universal Cooler refrigerating unit.

The Utica Radiator Corp.'s all-year exhibit consists of a unique unit featuring an air washer in which a water lift is used to elevate water from a reservoir into the air circulation fan wheel to be thrown as a spray with the air stream. During the summer season this water is cooled as necessary for effecting the necessary cooling and dehumidifying of the air by a tubular coil partially submerged within the reservoir and served to a Brunner refrigerating unit.

During the winter, the water spray is used for humidification only, a steam or hot water heating coil being used for heating the air-stream after it is humidified. If desired, the heating coil may be used for back-heating the air after it is cooled and dehumidified by the refrigerated water.

(Continued on Page 28, Column 1)

### Kelvinator Introduces Automatic Conditioner For Passenger Buses

DETROIT—A summer air-conditioning unit with full automatic control has just been introduced by the Kelvinator division of Nash-Kelvinator for use in passenger bus service, in answer to the air-conditioned streamlined trains which have been favored with so much passenger popularity.

Engineered and constructed by Kelvinator, the air-conditioning unit is built into a deluxe streamlined coach which was constructed by the White Motor Co. of Cleveland.

This research coach which is called the "Lord Kelvin Coach" in honor of the famous British scientist upon whose thermodynamic theories modern

(Continued on Page 15, Column 1)

## Johnson Motor Co. Markets 3-Model 'Briggs' Line

WAUKEGAN, Ill.—Johnson Motor Co., manufacturer of Jomoco condensing units, has on the market for 1937 a line of electric refrigerators bearing the name Briggs, and available in three models with capacities of 4, 6, and 8 cu. ft.

The refrigeration line has been named after F. S. Briggs, chairman of the board of Outboard, Marine & Mfg. Co., of which Johnson is a division.

Distribution of the line will be direct from manufacturer to dealer, with "middleman" or territorial distributor eliminated.

No national advertising will be done, according to Charles Coane, advertising manager. Distribution will also be on a "fair deal" basis, with one price to all on equal quantities, and no crowding of retail outlets, Mr. Coane states.

Smallest unit in the line is the "4," a model of 4-cu. ft. capacity and 8.51 sq. ft. shelf area. Ice cube capacity

(Continued on Page 2, Column 5)

## 33 Air Conditioning Installations Made In Chicago in Feb.

CHICAGO—Thirty-three air-conditioning systems, with a total capacity of 1,972 hp., were contracted for in the Chicago territory during February, according to reports compiled by Commonwealth Edison Co.

February installations set a new high mark for the month, showing a gain of 50% in number and of 57% in capacity over figures for February, 1936.

Contracts for air conditioning of general offices of business concerns totaled eight during the month, the largest in any one classification. Theaters ranked second, with six, and shoe stores third, with five.

First air-conditioning contracts for Chicago educational institutions were also closed in February. Plants are

(Continued on Page 18, Column 5)

## Dealer's Plan to Avert Trade-in Problem Nets Him Sales of 17 Electric Kitchens

By T. T. Quinn

UNIONTOWN, Pa.—M. R. Baker of Service Radio & Electric Co. here has sold 17 all-electric kitchens since last Dec. 1. The company sold between 300 and 400 Westinghouse refrigerators last year, and about 100 gas and electric ranges—and Mr. Baker gives the "kitchen idea" the credit for getting most of the business.

Stressing the kitchen ensemble, Mr. Baker says, not only helps electric refrigerator sales, but with the cabinet work and gas or electric range included, does pretty well for itself as a profit-maker.

There's been a lot of building and modernizing going on around Uniontown, Mr. Baker says, and that's what gave his kitchen planning scheme the impetus to get under way.

He has Miss Dorothy Evans, an art teacher, doing his design work, and he credits a large number of his sales to the attractive method of presentation her efforts achieve.

Method of procedure is this: Mr. Baker and Miss Evans go out to see the house, get the kitchen measurements—and then Miss Evans

## Trade Practices Code Set Up by Denver Dealers

DENVER—A retail code agreement establishing standard trade-in allowances on electric refrigerators, discounts on employe and government purchases, governing sales events and deviations from established list prices, defining ethical advertising practices, and providing penalties for non-conformance became effective Mar. 1 among a group of large retail dealers here as a result of efforts to settle disagreements over trade-in practices in the Denver area.

Included in the group signing the agreement are most of the department and large furniture stores in the city, together with a number of independent dealers.

Another group of independent retailers has refused to sign the agreement, including several distributors who, it is said, concede the need for regulation of trade practices, but fear cooperation will mean citation under the Sherman Anti-Trust Act.

Reports from a source close to the situation indicate that court action will soon be taken by this opposition bloc to test the legality of the code.

Main feature of the code is a set of maximum trade-in allowances on 17 standard makes of electric refrigerators, covering 3-cu. ft. to 12-cu. ft. sizes on models made between 1927 and 1936. The maximum amount which a dealer can allow on a trade-in is \$130 on a 1936 box of 12 cu. ft. size; others range down to a minimum of

(Continued on Page 6, Column 1)

## G-E Supply Takes Over Capital Distributorship

WASHINGTON, D. C.—Sale of National Electrical Supply Co., G-E distributorship, to General Electric Supply Corp. was announced last week by E. C. Graham, president of the company. Terms of the sale were not made public.

National Electrical Supply will maintain offices at 1330 York Ave. Mr. Graham said, to carry on collection and settlement of accounts receivable. The firm will also continue its activities in the air-conditioning and heating business.

The company, in business for 40 years, is reported to have done close to \$2,500,000 in volume during 1936.

## Anti-Utility Bills Opposed At Hearings in Four States

**Detrola Radio Co.  
Enters Household  
Refrigerator Field**

DETROIT, March 16—Making its debut in the electric refrigeration field with a line of four models, Detrola Radio & Television Corp. today announced the formation of Detrola Refrigeration Corp. as a division of the parent corporation. A showing of the new line to an invited list of 5,000 Detrola radio dealers will be held Sunday and Monday, March 21-22, at the Fort Shelby hotel here.

Following several months of preparation, during which Detrola purchased the former Ireland & Matthews munitions plant bordering Beard, Chatfield, and Green avenues as a scene for its refrigeration and radio operations, President John J. Ross has announced that assembly of the new Detrola line will begin at the rate of 100 per day about April 1.

Remodeling and outfitting of the new plant is being supervised by Frank West, new chief engineer of Detrola Refrigeration Corp., and formerly connected with Kelvinator and Copeland.

According to present plans, Detrola will undertake only assembling operations on its line during the current year pending completion of manufacturing facilities on the first floor of its four-story plant. Step-ups in assembling operations will be made until production reaches 200 refrigerators per day by early summer, President Ross said.

Retailing of the new Detrolas will be handled through Detrola Radio & Television Corp.'s 5,000 dealerships located at various points throughout the country, and the present radio export division which has branches in 56 foreign countries.

Four models in 4, 5, 6, and 7-cu. ft. cabinet sizes comprise the new Detrola line, known as DG-447, DG-577, DG-677, and DG-777. Tentative retail list prices have been announced as

(Continued on Page 8, Column 2)

### Something to Remember On Easter Morning

San Francisco's famed Sunrise Easter Service atop Mt. Davidson, managed by Clarence F. (Sandy) Pratt of California Refrigerator Co., refrigeration supply jobber, will be broadcast over a nationwide NBC red network from 6 to 6:30 a. m., Pacific Coast Time (9 to 9:30 a. m., Eastern Time.)

### Universal Cooler Ups Prices \$5 a Unit

DETROIT—Price raises of \$5 per unit on its four deluxe household refrigerator models have been announced by Universal Cooler Corp., effective Monday, March 22. New price schedule is as follows:

Model	Capacity Cu. Ft.	Old Price	New Price
D537	5.23	\$134.95	\$139.95
D657	6.51	149.95	154.95
D757	7.46	174.95	179.95
PD65	6.51	164.95	169.95

### Archibald Made Jewett Sales Manager

BUFFALO—Joseph A. Archibald has been appointed vice president and sales manager of Jewett Refrigerator Co. For the past 14 years, he was an account executive in the Buffalo office of Batten, Barton, Durstine & Osborne, advertising agency.

**Acts Barring Appliance Sales  
Discussed in Wisc., Ohio,  
Mass., and New York**

WASHINGTON, D. C.—Bills seeking enactment of laws prohibiting the sale of electric refrigerators and other household appliances by public utilities provoked spirited discussion in preliminary public hearings before state legislative committees in Massachusetts and Wisconsin last week. Legislatures of seven other states are considering similar bills proposed since the first of the year.

At a public hearing on the Massachusetts measure in Boston, manufacturers, wholesalers, contractor-dealers, and labor union leaders voluntarily rallied to the support of utility representatives on hand to oppose the proposed law, which would bar gas and electric companies from selling appliances.

Most of the speakers declared that utility merchandising benefits all branches of the electric and gas industries, and that prohibition of appliance sales by utilities would result in reduction of public demand for them and loss of the advantages of volume production to the consumer.

Other allegations produced in defense of utility selling were: a prohibitory bill would throw hundreds out of employment; advantages of using utility showrooms as stores on a commission basis to outside customers would be lost; sale of non-standard, inferior, and dangerous merchandise would increase, and utility rate reductions, now progressing, would be delayed.

S. P. Townsend, appearing for Westinghouse Electric & Mfg. Co., stated that passage of the proposed measure would adversely affect the 4,200 Westinghouse factory employees in Massachusetts. He also declared that 24-hour servicing of appliances can be better handled by utility service facilities than by those of dealer agencies.

Once a vigorous advocate of anti-merchandising legislation passed six years ago in Oklahoma and Kansas, P. W. Donohue, past president of the National Association of Master Plumbers, appeared at the hearing to state that these utility laws had proved a mistake and recommended killing the Massachusetts bill as a damage to the trade and the public. Herbert Metz, representing Graybar Electric, said that passage of the Kansas and Oklahoma laws had resulted in materially decreased appliance sales in those states. The anti-utility selling law has since been declared unconstitutional in Kansas, while the Oklahoma measure remains intact.

(Continued on Page 2, Column 1)

### Kelvinator's February Sales Best on Record

DETROIT—Last month was the best February in the history of Kelvinator division, Nash-Kelvinator Corp., in spite of the fact that shipments were made during only two weeks of the month, according to Henry W. Burritt, vice president in charge of sales.

Unit shipment of all Kelvinator refrigeration products, including both domestic and commercial products, totaled 31,287 during February. This figure shows a gain of 1,788 units or 6% over shipments for the same month last year.

Shipments for the first five months of Kelvinator's fiscal year which began Oct. 1, 1936, totaled 122,653, or 38.8% above the 88,378 units shipped during the corresponding period of the previous fiscal year.

# HOUSEHOLD REFRIGERATOR SPECIFICATIONS

29 MAKES—243 MODELS  
PART 2 OF THIS ISSUE

UNIVERSITY OF CALIFORNIA  
LIBRARY  
BRANCH OF THE  
COLLEGE OF AGRICULTURE



## Utility Aids to Appliance Promotion Cited in Fights on Proposed Laws

(Concluded from Page 1, Column 5)

An assembly committee of the Wisconsin legislature heard testimony by opponents of a recently introduced anti-merchandising bill, similar to others rejected in 1931, 1933, and 1935. Where formerly independent dealers and most distributing firms united in favoring prohibitory legislation, last week's hearings were marked by the appearance of many distributors and independents to condemn the latest effort to oust utilities from the appliance merchandising field.

A. J. Whitcomb, representing Milwaukee Electric Railway & Light Co., led the attack on the proposal. He declared that it would prohibit service work on appliances by utilities and would prevent introduction of new appliances which he said none of the independent retailers could handle until a market for them had been established.

Arguments for the Wisconsin bill were summarized by J. B. Mica, representing the state's furniture dealers, and Richard Thrum, La Crosse, who appeared for independent appliance selling outlets.

Mica urged passage of the measure because utilities held an "ace" over buyers' heads to guarantee payment of bills—the possibility of shutting off electrical service. He declared that independent dealers could seldom afford to sell on the long-time deferred payment plans offered by utilities which add small payments on appliances to buyers' electric and gas bills. Thrum added that utilities' metermen could double as canvassers and thus provide their companies with prospects at no extra cost.

J. H. Fagan, Milwaukee distributor, maintained that any dealer could sell appliances at prices lower than those offered by utilities if the independent retailer would "hustle" a bit more. He stated that 85% of his customers were independent dealers.

E. H. Schaefer, of the E. H. Schaefer Corp., Milwaukee G-E distributor, defended utility selling by declaring that business would suffer unless the state's utilities continued their valuable promotion work in the appliance field.

Another request for killing the bill came from F. W. Sheckey, Fort Atkinson, representing the Jefferson County Farm Bureau, who said that farmers belonging to rural electrification cooperatives had to purchase their appliances as cheaply as possible, and that this could best be done through utilities.

Frank W. Greusel, of the Maurer-Greusel Co., Milwaukee distributors, declared that "if utilities are prohibited from selling, dealers and other merchants will within a short time be engaged in cut-throat competition of such a nature that many failures will be caused in their own ranks and result in injury to the public through the sale of unsafe and substandard appliances."

Neither the Massachusetts nor Wisconsin legislative committees have as yet announced their recommendations on the proposed measures.

At a hearing last week in Albany, N. Y., before the Public Service Committee, a proposal to bar the manufacture and sale of household electrical appliances by utility companies, introduced by Assemblyman Max M. Turshen of New York City, was opposed by utilities officials and employees, who contended that hundreds of sales and service workers would be thrown out of jobs if the measure were passed.

Col. Charles Blakeslee, representing Long Island Lighting Co. and several other utilities of that district, termed the bill "confiscatory and unconstitutional." Utilities, he said, give the public "bigger selection, better financial items, and a better type of appliance service" than independent dealers.

George A. Hughes, New York City and Chicago appliance manufacturer, who identified himself as the inventor of the electric range, said that utility promotion of appliances aids both consumers and independent dealers.

"Promotion by the companies," Mr. Hughes said, "is reflected in the independent dealer's sales, and use of the appliances increases the power load, bringing rate reductions."

Defending the bill, Assemblyman Turshen said that many dealers who favored its passage were unable to be present at the hearing. He contended the bill was constitutional, and said that utility franchises do not include the right to manufacture and sell household appliances.

Passage of the bill was also urged by J. O. Stapf, representing the Master Plumbers of Albany.

"No dealer wants to have the big utility companies handling the merchandise he sells," he said.

Miss Elizabeth Sweeney of Geneva, representing home service employees of utility companies, said that 300 of them would be thrown out of work by enactment of the bill. Representatives of salesmen employed by utilities urged defeat of the measure on the same grounds.

Ohio House Bill No. 194, designed to prohibit utility sales of electric and gas appliances, was tabled indefinitely after a hearing last week before the Public Utilities Committee, and no action is expected to be taken at the present session.

The bill, sponsored by Rep. Joseph Lustenberger of Cincinnati, would permit utility companies to sell light bulbs, sockets, fuse plugs, extension cords, and similar equipment, but would bar them from selling any merchandise not directly connected with the furnishing of public utility service.

A similar Senate bill, introduced by Senator John F. Meyers of Canton, also includes a fine of \$100 for each offense. Although it has received no official consideration as yet, Ohio retailers, through the Ohio Council of Retail Merchants, expect more favor-

able reaction to the measure than was accorded to Rep. Lustenberger's House bill.

However, because of previous failures of similar measures, it is conceded that the measure has little chance for enactment at either this or immediate future sessions.

Similar bills have so far this year been introduced in the legislatures of the states of Texas, New Hampshire, Pennsylvania, Michigan, and Connecticut.

The bills thus far introduced are: Texas (H124)—Prohibits all utilities from selling, renting, or manufacturing appliances.

New Hampshire (H331 and S3)—Prohibits utilities from selling appliances.

Pennsylvania (H247)—Prohibits utilities from selling, renting, or manufacturing appliances.

Michigan (S93)—Prohibits utilities from selling, renting, or manufacturing appliances.

Connecticut (S1068)—Prohibits utilities from selling, distributing, or manufacturing appliances, except fuse plugs, light bulbs, outlet plugs, sockets, extension cords, or repairs.

## Gilliand Hangs Up 29 Sales in Two Weeks

SAN DIEGO, Calif.—Ross Gilliand, whose refrigerator sales with Standard Furniture Co. here qualified him for membership in the Westinghouse 1936 Quota Busters club and a trip to the Mansfield and Springfield, Mass. factories, is well on the way to meriting a return trip for his 1937 efforts.

Mr. Gilliand sold 29 new refrigerators during a two-week period in February.

## N.R.D.G.A. To Meet In Chicago June 21-25

CHICAGO—Timed to precede the influx of buyers and merchandise executives for the Chicago market week, the 1937 mid-year convention of National Retail Dry Goods Association will be held at the Palmer House here, June 21 to 25.

In addition to the six divisions and groups which sponsored sessions at the 1936 summer gathering, the June meeting this year will also feature sessions of the merchandising division. The other groups are controllers' congress, store management group, personnel group, credit management division, traffic group, and retail delivery association.

## Renfrew to Build Coolerator Ice Refrigerators in Canada

RENFREW, Ontario, Canada — A Canadian-built Coolerator ice refrigerator to be known as "Coolerator Barnet Built" will soon be produced by Renfrew Electric & Refrigerator Co. here, according to Coolerator Corp. officials.

The Renfrew company manufactures the Renfrew and Barnet lines of refrigerators. The Barnet brand has won awards at industrial exhibitions in many countries. The firm was a pioneer in the Canadian refrigeration field, and has been in business for more than a quarter of a century.

## Key Specifications of New Briggs Line

Model No.	Net Capacity (Cu. Ft.)	Shelf Area (Sq. Ft.)	No. of Ice Trays	No. of Ice Cubes	Exterior Dimensions		
					Height Inches	Width Inches	Depth Inches
"4"	4.17	8.51	2	42	52½	24¼	24
"6"	6.31	9.79	3	84	59¼	29	24
"8"	7.85	13.02	3	84	63	31½	25

## WHEN THE SALE HANGS IN THE BALANCE

## TIP IT YOUR WAY WITH G-E MOTORS



WHEN a prospect really wants a refrigerator but isn't quite sure which make to buy, the mention of the high-quality electrical features of the one you sell will often decide the sale in your favor.

If the refrigerators you sell are equipped with G-E motors, you have this strong additional sales point.

These motors have an enviable service record, and mentioning them may be just the thing to change a prospect into a customer. Many appliance dealers already know that G-E motors are a definite sales aid. Note what they say at the lower left.

If some ask why these motors are better, tell them about the indestructible rotor with the cast-aluminum winding that cannot become open-circuited or burn out; about the rings of springy rubber that isolate motor vibrations; and about the automatic-belt-tightener base that maintains just enough belt tension to prevent slipping. And remember that these are only a few of their many superior points. General Electric Company, Dept. 6A-201, Schenectady, New York.



G-E MOTORS PASS ALL TESTS

## 84 PER CENT SAID "GENERAL ELECTRIC"

In a recent impartial survey, electric-appliance dealers and department stores were asked:

"What makes—or brands—of motors, in your opinion, would make it easier for you to sell appliances?" General Electric was named by 84 per cent.

LET G-E MOTORS HELP YOU SELL

GENERAL  ELECTRIC



"Refrigeration? You couldn't sell us anything BUT Copeland. My own experience has shown me which is the best."

Hotels, restaurants, soda fountains, dairies—wherever economical, trouble-free refrigeration is vital, you'll find Copeland enthusiasts.

Write for our Sales Plan

**COPELAND**

REFRIGERATION CORPORATION, DETROIT, MICHIGAN



IT'S A G-E YEAR!

NEW **Triple-Thrift** REFRIGERATORS

*America's Buying* **ONE A MINUTE!**

# START A PARADE OF PROFITS

with the outstanding Refrigerator value of the year!

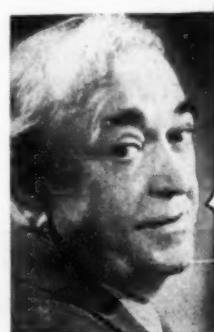


THIS is a big year for General Electric dealers. Prices are lower, values greater than ever before, and there's a G-E model to suit each prospect. The new General Electric Triple-Thrift Refrigerators are attracting buyers from every walk of life. All America can now afford this preferred refrigerator—and they're buying 'em at the rate of one a minute!

But that's not all, for the sale of a G-E Refrigerator means not just one profit—it starts a whole parade of profits! The refrigerator buyer is a preferred prospect for other G-E home appliances and the General Electric dealer has a complete line. He can offer everything from a fan to a complete electric kitchen or laundry; each product iden-

tified by the famous G-E monogram.

There are 15 new G-E Refrigerator models, all powered with the matchless sealed-in-steel Thrift Unit that has an unparalleled record for dependable performance. It is the only refrigerator mechanism with forced-feed lubrication and oil cooling—exclusive features that mean enduring economy.



BOTH THE USER AND THE DEALER CAN DEPEND ON THE TROUBLE-FREE PERFORMANCE OF THE TIME-TESTED G-E THRIFT UNIT.



The ONE complete line of electric appliances for the home. Bigger Volume! Bigger Profits!

THE GENERAL ELECTRIC LINE GIVES ME A PROFITABLE BUSINESS THE YEAR 'ROUND —AND IT CERTAINLY HAS PUBLIC ACCEPTANCE.



Refrigerators, Ranges, Dishwashers, Garbage Disposals, Complete Electric Sinks, Unit Kitchens, Washing Machines, Ironers, Vacuum Cleaners, and a complete line of Water Coolers, Beverage Coolers and Commercial Refrigeration equipment for every purpose. General Electric Company, Section DF-3, Nela Park, Cleveland, Ohio.

**GENERAL ELECTRIC**



# Exclusive!

## ... The Crosley SHELVADOR Alone Offers This EXTRA USABLE SPACE

### Make This Startling Visible Demonstration

**ALL THIS FOOD**

**WHICH TAKES UP ALL THIS ROOM IN AN ORDINARY REFRIGERATOR**

**... GOES IN HERE**

*Thus Proving -*

**THIS MUCH MORE**

**EXCLUSIVELY IN THE CROSLY SHELVADOR**

The Crosley Shelvador offers the buyer more usable food storage space than any other electric refrigerator on the market . . . and you can prove it conclusively right on your sales floor!

In the illustrations above showing this dramatic demonstration, the whole tableful of food—48 pieces in all—is placed first in an ordinary refrigerator, filling up all the normally used shelf area. Then all this food is transferred to the Shelvador, which takes every piece of it without excessive crowding.

What more powerful and convincing sales argument can be offered for any refrigerator than such a demonstration! . . . particularly when it is backed by: 1. MORE BEAUTY; 2. MORE CONVENIENCE; 3. MORE ECONOMY; 4. MORE ACCESSIBILITY and

offers such selling features as the sensational Electrosaver, the Stora-drawer, new tilting shelves, special removable shelf section, spacious Crosley Crisper, Built-in Thermometer, 18-point temperature control, and a dozen others.

It's going to be tougher than ever to sell against the Crosley Shelvador in 1937 . . . and easier than ever to sell the Shelvador. Alert dealers who know refrigerator value and are familiar with public demand are enrolling under the Crosley banner and assuring themselves of the greatest year in their history with — **THIS MUCH MORE EXCLUSIVELY IN THE CROSLY SHELVADOR.** See your Crosley Distributor for complete details of the Crosley Franchise.

**THE CROSLY RADIO CORPORATION, Cincinnati** **POWEL CROSLY, Jr., Pres.**

Home of "the Nation's Station"—WLW—70 on your dial

**THE CROSLY SHELVADOR . . . Patented, Exclusive Feature**



# THE CROSLEY SHELVADOR FOR 1937

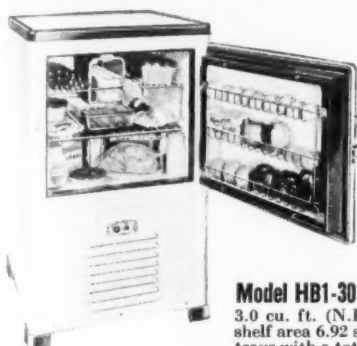
MORE BEAUTY • MORE ECONOMY • MORE CONVENIENCE • MORE USABLE SPACE • MORE ACCESSIBILITY

"THIS MUCH MORE" EXCLUSIVELY IN A CROSLEY SHELVADOR

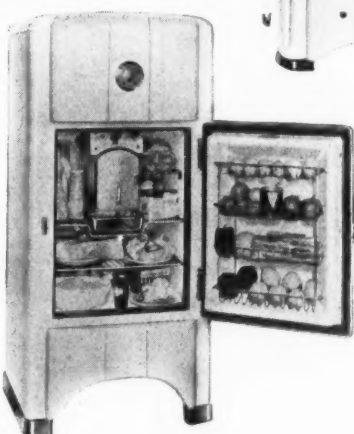


**Model HB5-71** Net capacity 7.1 cu. ft. (N.E.M.A. Rating), shelf area 16.77 sq. ft., 7 ice cube trays with a total capacity of 168 ice cubes. Features include: Shelvador, New Hermetic Unit Model T-5 with Large Double-section Still Air Condenser, Float Valve, Freon F-12 Refrigerant, 18-point Temperature Control, Built-in Thermometer, Hinged Shelf. Dimensions: 58 $\frac{1}{2}$ " high, 33 $\frac{1}{4}$ " wide, 29 $\frac{1}{4}$ " deep.  
MODEL HB3-71—Same as above, excepting Standard Q3 type Compressor Unit.

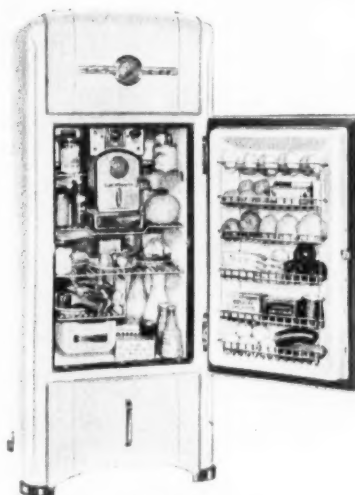
**DeLuxe Model HL5-71** Net capacity 7.1 cu. ft. (N.E.M.A. Rating), shelf area 16.77 sq. ft., 7 ice cube trays with a total capacity of 168 ice cubes. Features include: Shelvador, New Electrosaver Hermetic Unit Model T-5 with Large Double-section Still Air Condenser. The latest development of float valve is used and the refrigerant is Freon F-12, the safest for home use. 18-point Temperature Control speeds up the freezing of ice cubes and frozen dishes. Built-in Thermometer gives you visible proof of safety zone food compartment temperatures. 5 All Flat Wire Shelves, 2 Hinged Shelves, Bottom Shelf has Removable Section, Bright Chrome Satin Finish Door to Fast Freeze Cube Compartment, 3 Crosley Shelf-Jars and Covers, 6 Red Beadware Dessert Cups, Crosley Crisper, Stora-drawer, Porcelain Interior with Acid-resisting Porcelain Bottom, Brilliant White Dulux Exterior, Bright Chrome Hardware with Blue Inlay. Dimensions: 58 $\frac{1}{2}$ " high, 33 $\frac{1}{4}$ " wide, 29 $\frac{1}{4}$ " deep.



**Model HB1-30** Net capacity 3.0 cu. ft. (N.E.M.A. Rating), shelf area 6.92 sq. ft., 2 ice cube trays with a total capacity of 42 ice cubes. Dimensions: 36" high, 23 $\frac{3}{4}$ " wide, 25" deep. MODEL HB8-30—Same as above excepting Standard Q1 type Compressor Unit.



**Model HB1-36** Net capacity 3.6 cu. ft. (N.E.M.A. Rating), shelf area 8.07 sq. ft., 3 ice cube trays with a total capacity of 63 ice cubes. Dimensions: 51 $\frac{1}{2}$ " high, 23 $\frac{3}{4}$ " wide, 24 $\frac{1}{2}$ " deep. MODEL HB3-36—Same as above, excepting Standard Q3 type Compressor Unit.



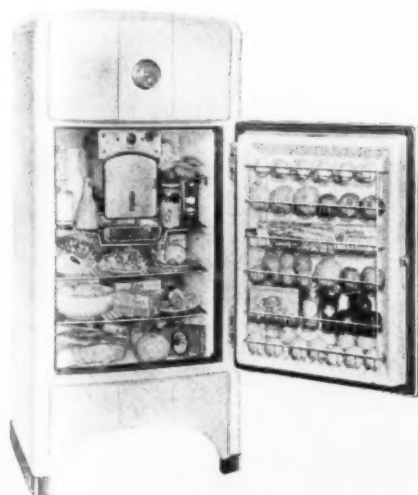
**Model HB1-41** Net capacity 4.1 cu. ft. (N.E.M.A. Rating), shelf area 8.33 sq. ft., 3 ice cube trays with a total capacity of 63 ice cubes. Dimensions: 53 $\frac{1}{2}$ " high, 23 $\frac{3}{4}$ " wide, 24 $\frac{1}{2}$ " deep. MODEL HB3-41—Same as above, excepting Standard Q3 type Compressor Unit.

**DeLuxe Model HL5-43** Net capacity 4.3 cu. ft. (N.E.M.A. Rating), shelf area 9.9 sq. ft., 4 ice cube trays with a total capacity of 84 ice cubes. Dimensions: 56 $\frac{1}{2}$ " high, 23 $\frac{3}{4}$ " wide, 26 $\frac{1}{2}$ " deep.

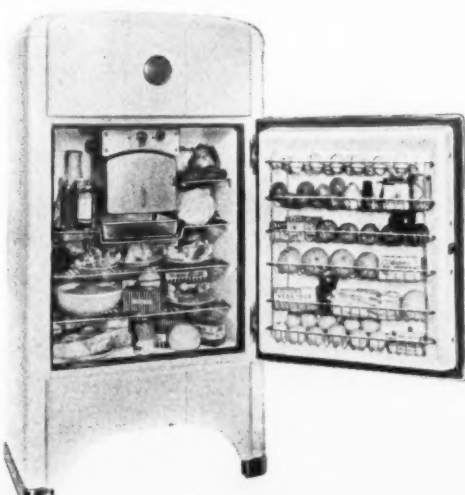


## CROSLEY ELECTROSAVER FEATURED IN DELUXE MODELS...

Summed up in one word, "ELECTROSAVER", all the years of earnest study, superior engineering skill and tireless experimentation combine to bring worthwhile savings to every Shelvador user. The new Crosley T5 Hermetic Unit is a marvel of efficiency and its exceptional operating economy, its long life and quiet dependable performance represent the highest possible value in electric refrigeration today assuring enthusiastic customer satisfaction.



**Model HB1-50** Net capacity 5.07 cu. ft. (N.E.M.A. Rating), shelf area 11.98 sq. ft., 4 ice cube trays with a total capacity of 84 ice cubes. Dimensions: 56 $\frac{1}{2}$ " high, 27 $\frac{1}{2}$ " wide, 24 $\frac{1}{2}$ " deep. MODEL HB3-50—Same as above, excepting Standard Q3 type Compressor Unit.



**Model HB1-60** Net capacity 6.0 cu. ft. (N.E.M.A. Rating), shelf area 14.43 sq. ft., 7 ice cube trays with a total capacity of 168 ice cubes. Dimensions: 58 $\frac{1}{2}$ " high, 31" wide, 25 $\frac{1}{2}$ " deep. MODEL HB3-60—Same as above, excepting Standard Q3 type Compressor Unit.



**DeLuxe Model HL5-50** Net capacity 5.63 cu. ft. (N.E.M.A. Rating), shelf area 12.62 sq. ft., 4 ice cube trays with a total capacity of 84 ice cubes. Dimensions: 56 $\frac{1}{2}$ " high, 27 $\frac{1}{2}$ " wide, 26 $\frac{1}{2}$ " deep.



**DeLuxe Model HL5-61** Net capacity 6.1 cu. ft. (N.E.M.A. Rating), shelf area 15.8 sq. ft., 7 ice cube trays with a total capacity of 168 ice cubes. Dimensions: 58 $\frac{1}{2}$ " high, 29 $\frac{3}{4}$ " wide, 28 $\frac{1}{2}$ " deep.

of the CROSLEY ELECTRIC REFRIGERATOR



## Shelvador Action Display



This action display will feature the Crosley Shelvador refrigerator in Cincinnati's fifth annual Electrical Progress Exposition to be held in the Union Central Annex March 15 to 20. The display consists of a mammoth revolving globe, cut out to reveal two Shelvador refrigerators; one closed and the other, seen in the photograph, giving an interior view. The little man

figure in the display moves his head and hands in pantomime explanation that there is "This much more in a Shelvador."

The exposition is jointly sponsored by the Cincinnati Electrical Association and the *Times Star*. The Shelvador display was built by Cooperative Displays, Inc., for Crosley Radio Corp. and the Union Gas & Electric Co.

## Denver Dealers Set Trade-in Allowances, Discount & Special Sale Policies

(Concluded from Page 1, Column 3)  
\$10 on a 1931 model of 3-cu. ft. capacity. Older models of 1927-1930 vintage are graded on the scale for 1931 refrigerators.

A 15% reduction is made from the code's allowance scale for trade-in refrigerators produced by any other than the following manufacturers: Frigidaire, General Electric, Westinghouse, Kelvinator, Norge, Leonard, Stewart-Warner, Crosley, Grunow, Hotpoint, Electrolux, Gibson, Mayflower, Fairbanks-Morse, Sparton, Coldspot, and Montgomery-Ward.

Standard allowances have also been provided for ice refrigerators. Top icers of any description may be traded in at \$2.50, side or front icers at \$5, and metal boxes for \$7.50.

Discounts from manufacturers' retail prices on new refrigerators may be allowed under the code to store employees and their immediate dependents at the discretion of the individual store. Discounts not to exceed 10% may be allowed to any one person or firm purchasing three or more refrigerators during any one year, dating from Jan. 1 to Jan. 1, the discount not to be allowed until the third box is purchased, although it may be allowed retroactively in the form of a credit upon the two initial purchases. Cooperative buying organizations are barred from discounts.

Government, state, or municipal agencies are allowed discounts at the

discretion of the retail store selling the refrigerator, provided that it is billed and delivered to the said agency.

The code prohibits selling of mechanical refrigerators, whether current or succeeded models, at retail prices less than those established by the individual manufacturers, excepting in the discount provisions allowed employees, quantity purchasers, and governmental agencies.

Offering of premiums, without charge, which effect a reduction in established retail prices is prohibited, and likewise inducement offerings of refrigerator equipment other than that provided by the manufacturer.

Another salient provision of the code allows retail stores to hold

three-day sales four times each year during which they may advertise and sell refrigerators at reduced prices. These are sanctioned only if the dealer holding the sale has made "every effort" to secure, for the sale, a make of refrigerator not carried by any other dealer who has signed the code, providing that his regular line is sold by one or more other dealers in the city.

Additional provisions applying to sales stipulate that the consent of the distributor wholesaling the line to the dealer must be obtained prior to the sale, and that notice of the sale must be given all other dealers retailing the same line in the city at least 10 days before the sale is begun.

Other condemned practices include: advertising or selling a refrigerator without clearly specifying to the purchaser its year and model; installing, without charge, outlets, wiring, or other facilities for a purchaser; selling refrigerators on terms without a carrying charge of at least one-half of 1% per month; permitting salesmen to split commissions with purchasers; and offering considerations for information leading to a prospect in excess of 2% of the resulting purchase.

Administration of the code has been vested in a Governing Board representing the four types of retail dealerships in the Denver area. The board includes six members, with George Flannigan, manager of the Retail Merchants' Bureau, as chairman, and Robert S. Kohn, American Furniture Co., member-at-large. The other four members, with the type of stores they represent, are:

Herb Names, Wells Music Co., specialty stores; Harry C. Denny, Blackmer Furniture Co., furniture stores; E. M. Rowland, Public Service Co., public utilities; Norman Harper, Joslin Dry Goods Co., department stores.

A warning will be given any company found to be a violator of the code upon its first offense, and upon conviction of a second offense will be penalized by a request from the board to the distributor enfranchising the accused dealer that the distributor withdraw his line from the offending party within three days after the board renders its judgment.

Refusal of the distributor to withdraw his line under these conditions will mean that all other dealers handling the line will discontinue its sale in their stores, the code says.

## Denver Code Standard Trade-in Allowances

Year	3	4	5	6	7	8	9	10	11	12
1936	\$40.00	\$55.00	\$65.00	\$75.00	\$80.00	\$85.00	\$95.00	\$110.00	\$120.00	\$130.00
1935	36.00	50.00	58.00	70.00	72.50	75.00	85.00	100.00	110.00	115.00
1934	30.00	40.00	48.00	55.00	60.00	62.50	70.00	80.00	87.50	95.00
1933	22.50	32.50	38.00	45.00	48.00	50.00	55.00	65.00	70.00	75.00
1932	16.00	22.50	27.50	30.00	32.50	35.00	37.50	45.00	48.00	52.50
1931	10.00	12.50	15.00	17.50	20.00	21.00	22.50	25.00	27.50	30.00
1930 and earlier	Same scale as for 1931 models.									



40% more efficient in keeping fresh vegetables — FRESH

—a demonstrable fact that will turn hard-to-close prospects into customers.

The JEWETT 3 COMPARTMENT 3 TEMPERATURE REFRIGERATOR

The new Jewett refrigerator has everything it takes to get the business on a competitive basis—every worthwhile feature that the public wants. And in addition it features the exclusive Jewett Humidifier Compartment which reduces vegetable shrinkage, by weight, more than 40%. You'll need the Jewett Refrigerator exclusive franchise to get the most profit in today's highly competitive market. Write or wire today.

Established 1849

THE JEWETT REFRIGERATOR CO., INC., BUFFALO, N. Y.

## Baker Advises Appliance Dealer to Work With Architect on Ensemble Kitchens

(Concluded from Page 1, Column 3)  
all hepped up over the idea of having the kitchen, a room with which most of them are not familiar, all worked out in advance for them.

If you get to an architect or contractor soon enough, Mr. Baker says, it's the easiest thing in the world to get him to include your planned kitchen in his general layout scheme. He gets the whole job, and sublets the kitchen to you.

Fully 75% of the people interested in, or logical prospects for, the all-electric kitchen own their own homes, Mr. Baker believes. This enhances the "cash on the line" angle of the business; these people can pay—and do.

But, you say, what's all this got to do with the small dealer? He can't afford to hire an artist to make detailed drawings—so where does he head into the picture?

True enough, admits Mr. Baker, the small dealer can't hire an artist—but he can work with his architects, and have one of their artists do the work, for an overall commission not exceeding 5%, small enough when you consider the profit on the whole deal.

His main reason for going into the planned kitchen field, Mr. Baker says, was because too many of his refrigerator deals were involving trade-ins, and he had to figure out a way to get around competition with a more liberal allowance, without sacrificing profits.

The ensemble idea, he says, has been a sales-saver. Most jobs run between \$800 and \$1,500, with an average of around \$1,000, and the size of the sale permits an extra liberal trade-in allowance, without seriously interfering with profits on the whole order.

If distributors would wake up to the advantages of selling the kitchen unit, Mr. Baker believes, they'd hire a special man to work with dealers, especially the smaller ones, in helping plan the kitchen. Careful planning is necessary to make things fit properly—and the many angles, corners, etc., in the average kitchen puzzle the small dealer.

Mr. Baker works with Whitehead Metal Products Co., from whom he buys his cabinets, and there's always a man available to help him. If the cabinet manufacturer can do this, Mr. Baker asks, why cannot the appliance manufacturer—who, after all,

stands to share in about 75% of the profit?

Most distributors are not interested in the all-electric kitchen, Mr. Baker thinks, because they're not selling the cabinets. But cabinets account for only about 25% of the total cost, anyway. Taking a long view of things, he asserts, would serve to show distributors the error of their present ways.

Women want a longer, one-piece worktop, Mr. Baker finds. This includes a longer sinkboard, with the sink toward one end rather than centered, he finds.

In connection with the sinkboard, Mr. Baker has found it possible to "sell up" the prospect to a dishwasher, as an additional piece of kitchen equipment. Cost of the average kitchen is about \$1,000, without the dishwasher, and the sink alone costs 60% of the dishwasher's price.

So, for a slight additional cost, the dishwasher may be added. Working on this angle, Mr. Baker says, has brought him several additional sales.

Although most of his present installations have been made on the complete unit basis, Mr. Baker is of the opinion that most sales, in the future, will be on the "piece at a time" plan. This can be done, he says, if the kitchen, as a whole, is carefully planned before any equipment is installed.

Financing is available through FHA, so there's little drawback to kitchen sales in the "money" direction. During the depression, banks had to take over many homes—and these will rent much easier, and for higher prices, if they have a modern kitchen. Incited to action by Mr. Baker, the banks in Uniontown are doing remodeling work in kitchens of the homes they own. So why not in other towns, he asks?

## Roman Art Adds to Line Of Artificial Foods

ST. LOUIS—Roman Art Co., Inc., manufacturer of artificial foods for refrigerator display purposes, has recently added several new articles to its line, according to O. A. McFadden.

New items include models of a 15-lb. turkey, capon, individual and group pork chops, two chickens, and a head of lettuce. This company now has more than 65 food items available for display purposes, Mr. McFadden said.

# condensers evaporators

for electric refrigeration  
and air conditioning  
applications — domestic  
and commercial.

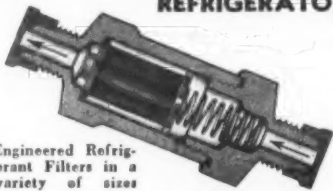
LONG MANUFACTURING DIVISION  
BORG-WARNER CORPORATION

# LONG

DETROIT, MICH.  
WINDSOR, CAN.

## THE NEW ZENITH REFRIGERANT FILTER

FOR SULPHUR DIOXIDE  
FREON OR METHYL CHLORIDE  
REFRIGERATORS



FINER SPACINGS THAN ANY  
ASBESTOS SACK OR  
WIRE SCREEN

LOWER PRESSURE DROP!

BETTER PROTECTION!

Special features include: Patented Element—Easily and Quickly cleaned—Easy to Install—Insures Positive Protection from Dirt in the Refrigerant Liquid—Corrosion-proof, Leak-proof and Ample Capacity. Write for full details.

ZENITH CARBURETOR CO.

Subsidiary  
BENDIX AVIATION CORP.  
Detroit, Michigan.



# The hit of the year!



## HELL'S KITCHEN

... A DRAMATIC REPRODUCTION OF TROPIC TEMPERATURES ENCOUNTERED IN WESTINGHOUSE PROVING KITCHEN NO. 1.

In tropic heat, even more severe than that found in Westinghouse Proving Kitchen No. 1, at the equator in Brazil, a standard stock model Westinghouse proves its full-powered efficiency and continuous food protection temperatures before your prospects' eyes. It is one of the biggest reasons why Westinghouse Kitchen-proved Refrigerators are setting new sales records for dealers everywhere.

## SELL THE REFRIGERATOR THAT'S *Kitchen-proved*

It's 10-year economy that counts...and Westinghouse Refrigerator 10-year economy is what won the recent P. W. A. Housing Division order for 16,697 refrigerators.



"Hell's Kitchen" provides the point-of-sale evidence that supports, reinforces, and dramatizes the facts of Westinghouse Kitchen-proved performance. And now, in the Westinghouse "Family Album of Kitchen-proved Savings," just ready for release, Westinghouse dealers have a perfect running mate for the "Hell's Kitchen" display. Actual reports of better food protection, greater convenience, full power, faster freezing, and greater economy — as observed and certified by 89 Home Proving Kitchens — in families from two to six — with monthly food budgets ranging from \$27 to \$80!

Now is a good time to get the facts. If you are not already selling "the refrigerator that's Kitchen-proved," get in touch with your distributor. Or write us in Mansfield. Dept. 7249, Westinghouse Electric & Manufacturing Co.



*Kitchen-proved*  
**Westinghouse REFRIGERATOR**



## Hearn's Ice-O-Matic Contract Renewed

NEW YORK CITY—Hearn's department store has renewed its contract to distribute Williams Ice-O-Matic electric refrigerators in the New York City territory this year. An initial order for 2,250 units accompanied the contract, it was understood.

While officials of the store are silent regarding the transaction, it is understood that deliveries, expected to average about 85 units daily, will begin within the next 15 days. Models called for are 4, 5, and 6-cu. ft. sizes, finished in Dulux, with porcelain units in those sizes available as needed, it was said.

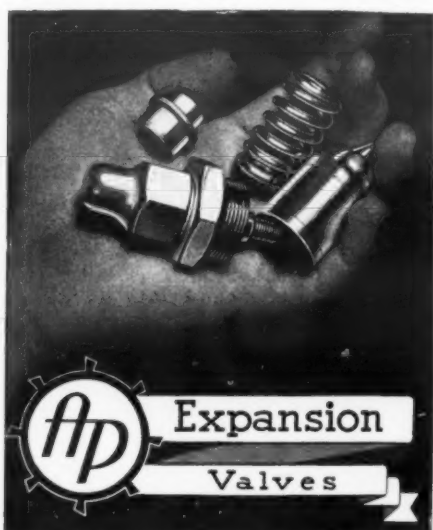
The contract is believed to be on approximately the same terms as that of last year, with the store having exclusive distribution rights within a 100-mile radius of New York City and being responsible for delivery, installation, and servicing.

Conditions of the 1936 contract called for delivery of 9,000 units before Jan. 1, 1937, and reports on Hearn's sales for the year vary all the way from 5,000 to nearly 8,000 units.

An additional large outlet for the promotion of Ice-O-Matic products in the New York metropolitan area was obtained by Hearn's through its recent purchase of Adams Flanagan, Bronx department store.

## New York's 12,559 Heads Up December Sales by States

States and Territories	Quantity of Household Low Sides
Alabama	21,348
Arizona	5,674
Arkansas	10,835
California	153,608
Colorado	14,002
Connecticut	32,049
Delaware	3,607
Dist. of Columbia	17,856
Florida	28,341
Georgia	31,006
Idaho	8,743
Illinois	138,631
Indiana	53,305
Iowa	27,559
Kansas	22,008
Kentucky	25,220
Louisiana	18,754
Maine	6,793
Maryland	21,189
Massachusetts	74,191
Michigan	97,078
Minnesota	26,674
Mississippi	10,364
Missouri	59,069
Montana	8,378
Nebraska	16,577
Nevada	2,484
New Hampshire	6,021
New Jersey	81,798
New Mexico	3,601
New York	222,327
North Carolina	34,226
North Dakota	3,096
Ohio	124,616
Oklahoma	18,936
Oregon	20,649
Pennsylvania	172,092
Rhode Island	9,618
South Carolina	16,684
South Dakota	4,780
Tennessee	29,136
Texas	75,610
Utah	10,890
Vermont	4,172
Virginia	29,441
Washington	31,348
West Virginia	22,768
Wisconsin	32,267
Wyoming	2,959
<b>Total United States</b>	<b>1,892,378</b>
Canada	24,809
Other Foreign (Including U. S. Possessions)	150,070
<b>Total for world</b>	<b>2,067,257</b>



Simply remove large hexagon nut on bottom of valve and parts drop into your hand. A-P Expansion Valves are available in a full range of sizes up to 15 tons "Freon" Capacity, and for all modern low-pressure refrigerants.

**Automatic Products Company**  
2450 North 32nd St., Milwaukee, Wis.

## West Styles Modern Cabinets for New Detrola Line

(Concluded from Page 1, Column 4) follows: DG-447—\$129; DG-577—\$179; DG-677—\$199, and DG-777—\$219.

Cabinet exteriors, designed by Mr. West, are of Detrolux porcelain with a center vertical chromium beading, rounded and streamlined door panels, chromium hardware with white lacquer striations, and soft-pressure door latch.

Interiors are of one-piece porcelain construction. Standard equipment on all four models includes an interior light operated by opening and closing of the door, sliding shelf for rearrangement of food contents, and a chilling tray for storage of extra ice cubes, meats, etc. A thermometer is located in the left side of the two larger cabinets.

The 5, 6, and 7-cu. ft. models have food files consisting of a hydrator drawer and food basket drawer located in the bottom of the cabinet. Greater food storage convenience is claimed for the milk bottle racks, sliding egg baskets, and tilting vegetable storage bins, the latter located back of the lower doors on these models.

A green color scheme has been used on the hydrator and fruit basket drawers in the cabinet interiors and on the handle of the door panel opening into the ice cube compartment. A 12-position temperature control is standard on all models.

### DOWN-DRAFT COOLING USED

The cooling unit on the new Detrola is of the down-draft, double-cooling type. Condensing units are provided with four-point rubber suspension. Freon is the refrigerant used in all cooling units, with Balsam Wool insulation lining the cabinets.

Tecumseh compressors powered by General Electric motors are used in the new models.

Expressing satisfaction with the new plant facilities recently acquired by Detrola Radio & Television Corp., Mr. Ross stated that he was confident the dealer organization already developed for the company's radio sales could move 25,000 Detrola refrigerators before the end of the current year.

Four assembly lines, each 260 ft. in length, are being built on the fourth floor of the new plant. Assembling operations and storage rooms will be located on this floor, with future manufacturing work done on the first floor of the building. Offices are located on the third story with radio manufacturing lines on the second floor.

The structure affords approximately 250,000 sq. ft. of floor space in the main plant and covers three blocks, with shipping facilities of the Michigan Central Railroad at the rear.

Officers of the Detrola Refrigeration Corp. are: John J. Ross, president; Howard B. Gates, vice president; and Hal Wessel, treasurer.



## FAN-E-FEX

The heavy-duty blower-type conditioner made in sizes to match machines of 1-1/2, 2, 3, 4, 5, 7-1/2, 10, 15 and 25 H.P.

Supplied for ceiling or floor mounting and for use with or without ducts.

San-E-Fex cools, cleans, dehumidifies, and circulates air for summer comfort.

For year round air conditioning, San-E-Fex is available with heating coils and humidifier also.

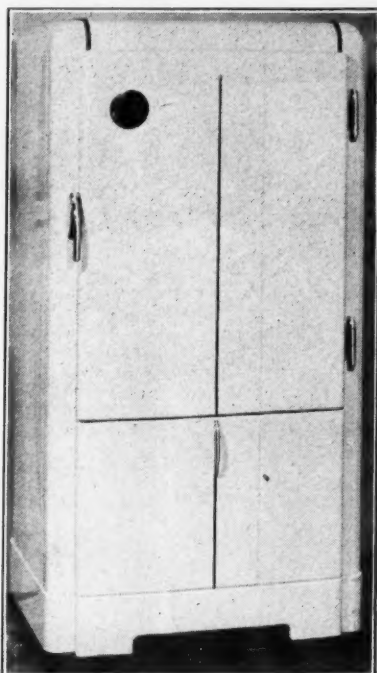
Detailed information supplied upon request.

REFRIGERATION APPLIANCES, INC.

FIN COILS, UNIT COOLERS  
AIR CONDITIONING UNITS

923 WEST LAKE STREET CHICAGO

## Newcomer



Cabinet style of the new line of refrigerators being introduced by Detrola Refrigeration Corp.

## Earnings

### Fairbanks, Morse & Co.

Fairbanks, Morse & Co., manufacturer of major appliances, engines, and motors, reports net earnings for 1936 of \$2,252,941, compared with a net income of \$1,465,779 in 1935.

Net profit for 1936, the best since 1929, was equal to \$3.42 per share of common stock after preferred dividend requirements, compared with \$2.47 a share in 1935. Net sales in 1936 were \$26,827,891, a gain of 47% over the \$18,221,228 for 1935.

For the first eight weeks of 1937, orders were about 36% greater than in the same period of last year, the company reports.

### Apex Electrical Mfg. Co.

Apex Electrical Mfg. Co. for the year 1936 reports net income of \$497,045, after provision for income and undistributed earnings taxes equivalent to \$4.78 per share of common stock, and after preferred dividend requirements were paid.

This compares with a net profit of \$198,439 for the year 1935, equal to \$1.56 per share of common stock, after provision for income tax and preferred dividend requirements.

Sales volume during 1936 increased approximately 17% over the previous year, it is reported.

## With Detrola



### FRANK WEST

Detroit engineer and inventor, who has been appointed chief refrigeration engineer of Detrola Refrigeration Corp.

### Los Angeles Distributor Visited by Grunow

LOS ANGELES—W. C. Grunow, president of General Household Utilities Co., recently visited Watson & Wilson, Inc., here, oldest Grunow distributor.

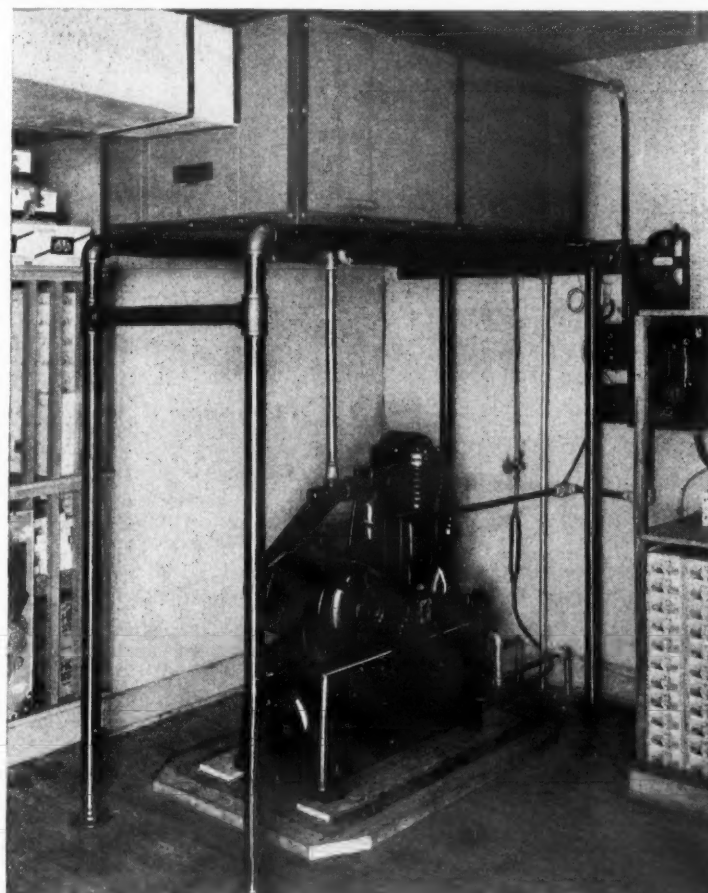
Mr. Grunow spoke to the local distributor's organization about the manufacture and marketing of Grunow products.

### Triplett Heads Baltimore Utility's Appliance Sales

BALTIMORE—C. N. Triplett, head of Baltimore Gas Light Co., refrigerator, radio and appliance distributor, has assumed charge of refrigeration and appliance activities of the organization. The concern distributes the Universal refrigerator, manufactured by Landers, Frary & Clark, of New Britain, Conn.

## Key Specifications of 1937 Detrola Refrigerators

Model	Net Food Storage Capacity (Cu. Ft.)	Shelf Area Total (Sq. Ft.)	No. of Shelves	No. of Ice Cube Trays	No. of Ice Cubes	—Exterior Dimensions— Height Width Depth Inches		
DG-447	4.0	7.5	2½	3	63	50½	24	22½
DG-577	5.35	11.45	3½	3	84	53½	28½	23½
DG-677	6.4	13.87	4	5	112	57½	30	25½
DG-777	7.4	15.88	4½	5	112	61	30½	25½



There is an oil in the Texaco Capella Series that will meet the needs of every type of domestic refrigerator and every type of refrigerant. They cover a viscosity range from 80 seconds to 500 seconds SUV at 100° F.

THEY  
*Have*  
TO BE  
GOOD!

from the refrigerant . . . and do not react to it. They stand up for years without gumming or sludging. They are thoroughly dehydrated.

Send your machines out lubricated with Texaco Capella. It's your assurance of long, trouble-free operation.

A Texaco representative will be glad to provide practical engineering service to prove the economy of any Texaco Lubricant.

AIR-CONDITIONING and electric refrigerating units are being built to survive, despite lack of care. The public flips a switch . . . and from then on, it's up to the unit.

They just have to be good. So does the lubricant. That's why more and more makers of equipment are using Texaco Capella Oils.

Capella Oils flow freely at low temperatures . . . They separate readily

**TEXACO**  **INDUSTRIAL LUBRICANTS**

THE TEXAS COMPANY  
135 East 42nd Street, N. Y. C.  
Nation-wide distribution facilities assure prompt delivery



## Muskegon and Jackson Dealer Groups Join State Association

GRAND RAPIDS, Mich.—Local appliance dealers' associations of Muskegon and Jackson, Mich., have joined the state-wide Michigan Appliance Dealers' Association, according to Carl Lass, secretary of Grand Rapids Appliance Dealers' Association and organizer of the state group.

Tony Wagner is president of the Muskegon chapter, Mr. Shuitema is vice president, and Mrs. Lindquist is secretary-treasurer. In Jackson, Mr. Dubrow heads the local group, Mr. Dettling is vice president, and Mr. Hamilton is secretary-treasurer.

Organization of the state dealers' association is proceeding rapidly, according to Mr. Lass.

## Brown Heads Division of Indianapolis League

INDIANAPOLIS—Roy L. Brown, manager of Westinghouse Electric Supply Co. here, has been elected chairman of the wholesalers' division of the Electric League of Indianapolis. Adolf Wagner, of the Wagner Radio Co., was named vice chairman.

Major activity of the division for this year will be close cooperation with the newly organized Indianapolis Electric Appliance Dealers' Association, and maintenance of high standards of business ethics among members of the wholesalers' group, Mr. Brown said.

## Feb. Leonard Shipments Up 66.3% over 1936

DETROIT—Shipments of Leonard refrigerators during February were 66.3% greater than shipments during that month last year, reports R. I. Petrie, Leonard sales manager.

Shipments for the first five months of the fiscal year beginning Oct. 1, 1936, were 113.3% greater than shipments for the same period of the preceding year.

## DeKorne to Distribute Potter in Grand Rapids

GRAND RAPIDS, Mich.—Coincident with its appointment as exclusive dealer of Potter electric refrigerators in this city, the DeKorne Furniture Co. formed a separate company, the DeKorne Appliance Co., to handle this branch of its business through three stores located in the city's business districts.

The DeKorne Furniture Co. entered the appliance business in 1932, to offset the drop in its furniture sales caused by the depression.

## Dunn to Distribute Crosley Line From Omaha Headquarters

OMAHA—H. E. Dunn, Inc., new Crosley distributor here, covers the entire state of Nebraska and the western portion of Iowa from its main office in Omaha's Gateway Bldg.

H. E. Dunn, founder and president of the distributorship, had 16 years of experience in the wholesaling field before organizing his own company. He had held every position from salesman to branch manager of Delco Light and Frigidaire Division of General Motors Corp. In 1930 Mr. Dunn organized his own company, buying out the Omaha branch of Delco Light.

## Wilson Heads Field Sales For Blau's Electric Shop

MIDDLETOWN, Conn.—George D. Wilson, local branch manager of Orkil Electric Co., Connecticut distributor of General Electric major appliances until it recently terminated retail sales activities here, has been named field sales manager for Blau's Electric Shop, Inc. Several other former members of the Orkil Middletown sales force have joined the Blau organization, now handling G-E refrigerators and other appliances.

## Union Steel Catalog Lists Refrigerator Baskets

ALBION, Mich.—In a catalog just issued, Union Steel Products Co. illustrates and describes its line of refrigerator egg, fruit, and vegetables baskets, clothes dryers, rubbish burners, camp stoves, and broilers.

New products shown include a line of all-purpose wire baskets with "zipper" tops, which may be opened or closed quickly by twisting a loop of wire. A special light-weight clothes dryer, providing 50 feet of clothesline space, is also described.

The "Hi-Lo" camp stove, another new product, enables the camper to regulate the heat by shifting the pan of coals closer to or farther away from the food being cooked.

# OF COURSE PORCELAIN ENAMEL WILL CHIP!

... SO WILL A BATTLESHIP IF YOU HIT IT WITH A BOMB



Let's talk about this matter of chipping frankly—and sanely. Porcelain enamel *will* chip, of course—if you hit it hard enough. It is a mineral substance—hard as glass. —But housekeepers don't clean mirrors, windows, refrigerators or sinks with a smithing hammer! —Considering the millions of mirrors and plate glass windows in use—how many ever break? A small fraction of 1 per cent! —Now suppose all those millions of mirrors were backed up with a sheet of steel—how many would break? A very precious few!

The fact that porcelain enamel is hard enough to chip, under very heavy impact, is a big feature in its favor. Being so hard—porcelain enamel is the one finish that won't scratch or dull or lose its lifetime lustre. Being flint-hard, porcelain enamel is the one finish in which delicate colors will never fade; the one finish that is absolutely non-absorbent. Being as hard as glass, it is clean, sanitary, enduring.

Porcelain enamel is the one sales feature which gives lifetime satisfaction. Feature it—talk it—push it—sell it. Be glad porcelain enamel is hard enough to chip. If it wasn't, it wouldn't be porcelain enamel.

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## AROUND THE WORLD WITH GEORGE F. TAUBENECK

Continuing with the story of refrigeration in Sweden and how it is sold, this week's instalment of the editor's "World Series" of delineations of foreign markets for air-conditioning and refrigeration equipment concludes with a brief study of the cooperative movement in that advanced nation.

Kooperativa Forbundet (the Cooperative Union) is a subscriber to AIR CONDITIONING AND REFRIGERATION NEWS; and, as the flowering of an idea which is having a world-wide vogue, in theory, deserves the attention of every reader.

### Low Selling Costs

Electrolux Svenska Forsaljnings A.B., Kylvadningen, is the jaw-breaking name of the Stockholm Electrolux selling organization which Gunnar Gruwe heads.

More than 2,500 refrigerators were sold in Stockholm in 1935 by his crew, at a valuation of a million kroner. This included the complete equipping of 80 apartment houses.

Two of his salesmen accounted for more than 1,000 refrigerators each, all to apartment houses.

Mr. Gruwe has sales crews in Malmo and other Swedish cities, also. Altogether, his outfit sold more than 5,000 Electrolux refrigerators in 1935. Some 4,500 of these were to apartments; 500 to individual homes.

He claims that the selling cost per refrigerator in 1935 was less than five per cent!

### Frigilux in France

Swedish Electrolux factory is located in Motala, between Stockholm and Malmo. English factory is just outside of London. German factory is in Berlin. French factory is at Courbevoie.

In France the Electrolux is called Frigilux.

General Manager of the French company is A. Papillon; sales manager is R. Biny; and the factory manager, a Swede, is S. Lange.

French gas utilities cooperate with this company, to the extent of helping with advertising, promotion, service, and installation. Partly as a result, 50% of the installations in France are of the gas-operated machine—by far the highest gas percentage in Europe.

In Paris the gas utility pays Electrolux a premium of 75 francs and up for each refrigerator installed. This sum is turned over to the advertising fund.

A similar scheme is in operation in Belgium.

### Frigidaire in Sweden

Because of Electrolux dominance in the household market, Frigidaire doesn't pay much attention to household sales in Sweden. I was informed by H. Roos, engineer of the Frigidaire distributorship.

In commercial sales, however, Frigidaire claims leadership. No air-conditioning installations have been sold as yet.

Under the leadership of G. Jonell, director, five commission salesmen are maintained in Stockholm to sell commercial equipment.

At the time of my visit, Frigidaire had 14 dealers working with Mr. Jonell, half of whom also handle service.

Little complaint against governmental restrictions could be found by the Frigidaire men. They simply pay

the 10% duty, and that's all there is to it.

Frigidaire seems to be no more conscious of competition in the commercial field than Electrolux does in the household market. Occasionally the agent for a German machine underbids Frigidaire, but not often.

### Radios

Aga and Ericsson radios are among the leading makes sold in Sweden. Philips goes good, too; with Asea and Telefunken (German) following closely behind.

All broadcasting in Sweden is under direct governmental control. No advertising is allowed on any of the programs.

Electrolux leads in vacuum cleaner sales. German manufacturers supply the ranges and small appliances.

Alfol (aluminum foil) insulation is largely used, with some cork. Alfol is a German patent, but is made in Sweden by several different manufacturers, including one of the large Cooperatives.

### Says the Consul

The market for American electric household appliances in Sweden is limited, declares the American consul, Walter A. Leonard of Stockholm. Domestic production practically excludes all foreign competition.

Electric fans are an exception and, incidentally, one of the few electrical items separately listed in the official import statistics.

Swedish imports of electric fans in 1935 amounted to 213,702 kilograms, valued at 703,406 kroner. The chief sources of supply were, in the order named, the United States, Germany, and The Netherlands. Imports from the United States in 1935 amounted to 55,329 kilograms, valued at 262,574 kroner.

### Power 'Taxes'

Electricity rates are called "taxes" in Sweden. Here are the varieties of "taxes" that are applied in the city of Stockholm to households and similar consumers.

*Tax 1. ("Belysningstaxa").*

This tax is applied when the electric current is only to be used for lighting purposes, and in homes where the consumer has no electric range or refrigerator. The price is 25 ore (6 cents) per kilowatt hour.

This tax is independent of the number of rooms.

*Tax 2. ("Varningstaxa").*

This tax is applied when a certain amount of energy is consumed for purposes other than for light, although installation of Electrolux refrigerators generally allows the use of a still cheaper tax.

This price is 12 ore (3 cents) per kilowatt hour. If a refrigerator of any

## Close-up of a Swedish 'Traffic Circus'



Modernity of Stockholm and other Swedish cities is nowhere better than in the "traffic circus" (the word "circus" is used to denote circles, rather than clowns and elephants). To turn right or left, the driver simply makes the proper corkscrew turn. Traffic thus flows in all directions without stop-and-go interruptions.

make other than Electrolux is used, this tax is applied.

In addition to this tax the consumer also has to pay a certain sum depending on the number of rooms, which can be roughly calculated as between 5 and 10 kroner per room.

*Tax 3. ("Hushallstaxa A").*

This tax is applied when the net consumption of energy amounts to at least 200 kilowatts per year. Consumers having Electrolux refrigerators are in this classification.

This tax is also applied to big households consuming large quantities of energy for cooking purposes, etc.

The price for this tax is four ore (one cent) per kilowatt hour. The minimum amount has to be paid for, even if it is not consumed. For every kilowatt hour consumed above the minimum amount the price is 12 ore (three cents) per kilowatt hour.

In addition to this figure the consumer has to pay a so-called energy tax, and a tax depending on the amount of rooms. These two taxes together amount to approximately 10 to 15 kroner per room per year.

*Tax 4. ("Hushallstaxa B").*

This tax is applied to very small homes (of one or two rooms), where a great deal of energy is consumed for cooking purposes, and is, therefore, somewhat cheaper than the above tax.

### The Great Cooperative

If you want to study the cooperative movement in distribution, go to Sweden. That's where it really works. Whether or not the idea could be developed successfully in the United States is a matter for debate; nevertheless, it is an idea which has caught the fancy of economists and politicians, and is something which should be studied no matter how you may feel about it.

The writer had particular reason for investigating it, because the Great Cooperative in Sweden is a subscriber to the News. Among other things, this enterprise makes insulation.

About the insulation there is little to report; but the movement itself, as you can see by reading on, is most fascinating.

### Its Antecedents

Kooperativa Forbundet (Cooperative Union) is regarded as one of the most interesting not-for-profit merchandising ventures in world economic history, and as such is both hailed and feared as a forerunner and prototype.

Evidence of the interest which it has attracted in the United States, at least from the standpoint of the present administration, was manifested by the commission of observers which President Roosevelt dispatched to Sweden last year.

Profit-sharing cooperative merchandising has an indeterminate history. The general idea of sharing profits for common benefit is almost as old as barter and trade itself. The Swedish movement, however, traces directly to cooperatives which were established by a group of English weavers in 1844 for mutual buying and selling.

Models of this cooperative program had been started in various parts of Sweden by 1860, but no real impetus was given to the movement on a large scale until 1899, when several small, individually-subscribed member societies formed the Cooperative Union.

### How Big It Is

In less than four decades, the Swedish Kooperativa has outstripped all cooperatives in foreign countries and, according to latest survey, has a membership of 550,700 families in 635 cooperative associations, employs 13,091 workers in its various divisions, maintains more than 4,000 stores, and has its own weekly newspaper, *Konsumentbladet*, with a circulation of 470,689—all this in a country of slightly over 6,000,000, or less than the population of New York City.

At least one third of the total Swedish population shares in the benefits of this enterprise.

Such success indicates widespread acceptance of the cooperative idea by the Swedish, both in theory and practice. According to Carl Berglund, Royal Swedish vice consul in Detroit, the antecedents of cooperation in the Swedish national character are hundreds of years old, and the idea is

"inbred" in the present generation. Hence the success of Kooperativa in 1936.

Mr. Berglund cites cooperative farming as one of the earliest trends toward cooperative merchandising in Sweden. Centuries ago, he says, farmers of a certain district would travel from farm to farm doing spring planting and fall harvesting, completing the seasonal work on each farm before they passed on to the next.

Thus, "many hands made light labor," and all worked for common benefit. Frequently farm products were sold in bulk, and the profits divided proportionately among producers.

The ancient Swedish "hay-mowings" are another indication of the cooperative trend in the country.

When Mr. Berglund was a youth working on his family's farm, he found several neighbors faced with difficulties in getting in their fall harvests because of a shortage of farm hands. He induced them to purchase harvesting machinery by a mutually subscribed fund, and each farmer's crops were harvested speedily with his neighbors' aid.

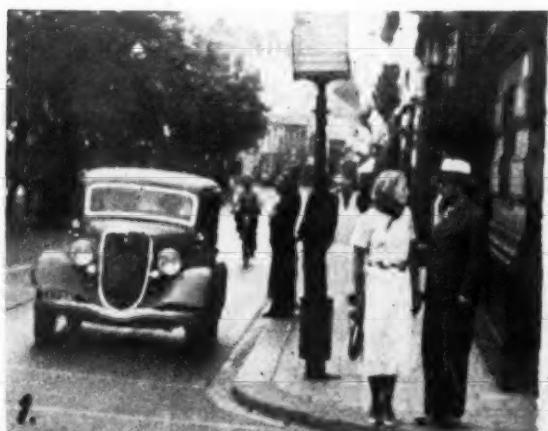
Several other factors enter into the cooperative picture in Sweden. Prominent among these is the fundamentally experimental nature of the Swedes; while ready to try any new and progressive method, they are careful to proceed with the experiment only after much forethought and observation. The cooperatives, therefore, are the products of long testing and painstaking planning.

Being a frugal, thrifty people with a national aversion to waste and greed, the Swedes were ideally prepared temperamentally for cooperative buying and selling.

What the average Swedish family wants is peace, nationally and internationally, and comfort and independence at home. Good living, as we know it, is as much desired in Sweden as in this country, although the Swedish idea of home luxury places more emphasis on excellent and abundant food, good liquors and wines, and self-entertainment, rather than on the American idea of mechanical conveniences.

(Continued on Page 12, Column 1)

## From Ford V-8's and Budding Garbos to the King of Sweden



(1) Ford V-8's are popular in Sweden, as are Lincoln Zephyrs, Cords, and Packard 120's. (2) If you look closely into the crowd of figures on the wharf, you may be able to see the King of Sweden. He has just alighted from the small motor launch. (3) Stockholm is a big, roomy city, liberally sprinkled with small parks like this one.



## Cooperative Electric Range Promotion Campaign Planned by Chicago Utility

CHICAGO—Intensive retailer co-operation, including a \$35 wiring allowance, a \$5 to \$10 trade-in allowance, and cooperative demonstrations and advertising, will form the basis of an extensive electric range drive to be launched here March 15 by Commonwealth Edison Co.

The campaign is a direct result of the lower electric rates which became effective here about five months ago. The present local rate for electricity, which is two cents per kilowatt after the first 100 kwh., is the lowest residential rate in Chicago's history. But even the lower rate has done little to aid electric range sales, less than 500 electric ranges being in use here at present.

Commonwealth Edison's campaign, based on studies made by the utility of similar drives in Detroit, St. Louis, Philadelphia, Minneapolis, and other cities in which the volume of electric range sales is comparatively large, includes newspaper, magazine, billboard, and radio advertising, as well as direct mail to a selective list.

### LIMITED TO CHICAGO

The drive will be definitely limited, however, to the city of Chicago. Concentrated sales effort will first be directed toward people living in single homes and two-family dwellings. This classification alone furnishes approximately 250,000 prospects within the city's limits.

Although the power company itself maintains a large merchandising department, top estimates place the utility's share of Chicago's total appliance sales at 15%. It is reasonable to assume, therefore, that 85% of all electric range business resulting from the coming campaign will be handled by the city's other retail outlets. Although utility executives have long realized the value of these other outlets in building up the company's load, the coming campaign evinces the first sign of actual co-operative measures upon the part of the utility.

Plans for the range campaign have been definitely designed to aid these independent outlets. All advertising will urge the public to inspect electric ranges not only at Commonwealth Edison stores, but at other appliance outlets as well.

### COOKING SCHOOL PLANS

The utility's staff of home economists will conduct electric cooking schools for various retailers as well as the Edison shops. Upon the request of cooperating retailers, the power company will arrange follow-up demonstrations in range purchasers' homes to assure correct and continued use of the range.

The utility also will conduct training demonstrations for the benefit of retailers' salesmen, and will make available to them educational range courses similar to those conducted for its own employees. In addition, the utility will assist retailers in solving their merchandising problems whenever the request is made.

Anxious to get the campaign off to a good start, the utility is making a special offer to its employees in the hopes of further stimulating range sales among these employees and their friends. Utility executives realize that word-of-mouth advertising of range users is the most potent advertising force at their command.

### OFFER TO DEALERS

Manufacturers' agents and distributors have been asked by the utility to recommend any merchant who they feel would qualify as a "cooperating" retailer. Any retailer operating one or more stores in which a "representative display of approved electric ranges is maintained," can apply for registration in this cooperative range sales plan.

As a further stimulus to the campaign, the Edison company will pay cooperating retailers \$35 toward the cost of installing each approved range sold to an electricity customer of the utility. Average cost of special wiring necessary for such installation should not run over \$35, according to utility executives, but retailers are warned not to make installations until they are sure that the wiring can be done at reasonable cost.

Retailers will be supplied with a "wiring agreement" form, to be signed by the building owner. In cases where a home owner does his own wiring, or a new home contains wiring approval by the company, the \$35 will be paid to the retailer as soon as the range is placed in operation.

This allowance, of course, will be made only on the original installation. The utility's range installation bureau will be available to aid in the solution of any installation problems which cooperating retailers may encounter.

The utility also will pay cooperating retailers \$5 toward trade-in allowances made on ranges listing for \$100 or less, and \$10 on ranges listing for over \$100.

Under the new plan, an "approved range" is one of standard quality with a minimum capacity of 5½ kw. and at least one surface burner of 1,800 watts or more. The range manufacturer must be able to furnish a certificate of approval issued by an accredited testing laboratory. The manufacturer or distributor of approved ranges must guarantee them against mechanical defects for at least one year, and also must have adequate local servicing facilities.

In its own retail business, the Edison company will begin with only one or two types of ranges, just as it did when first offering electric refrigerators. The utility's plan of selling electrical appliances calls for a down payment of \$5 to \$10 depending upon the amount of the sale, and a maximum deferred payment period of three years. The carrying charge is 6% of the original unpaid balance. The utility offers no trial installations or free wiring.

No change in the utility's present retailer policies is contemplated. The utility reserves the right, however, to discontinue the new cooperative plan upon 60-day notice at any time.

## Southwestern Electrical Co. To Retail G-E

WICHITA, Kan.—Appointment of Southwestern Electrical Co. as a full-line General Electric dealer has been announced by General Electric Supply Co., distributor. Officers of the dealership are R. M. Sutton, president; George Kindel, secretary and sales manager; and Homer S. Fox, treasurer.

## Mericope Appliances Opens New Office

NEW ORLEANS—Mericope Appliances, Inc., distributor for Hotpoint refrigerators and other household appliances, has opened a sales office at 728 Poydras St. here. Officers of the firm are Albert Meric, president; Irving E. Cope, vice president and general manager; and C. J. Lafaye, treasurer.

## Midwest-Timmerman Group Visits Grunow Plant

CHICAGO—More than 100 dealers and salesmen of Midwest-Timmerman Co., Davenport, Ill., and Dubuque, Iowa, arrived here Monday for a trip through the General Household Utilities Co. plant, a business meeting, and an evening's entertainment at Casino Parisien. The trip was a reward for sales of Grunow refrigerators and radios in a recent campaign.

About 150 dealers and salesmen in the territory of Specialties Distributing Co., Detroit, are scheduled to make a similar trip next week as

guests of Leonard Turnbull, president of the company.

Several other Grunow distributors have similar contests under way during March, April, and May, according to J. J. Davin, General Household Utilities sales promotion manager.

## Brodrick & Blair Add G-E Line; Move to Larger Quarters

NEW HAVEN, Conn.—Brodrick & Blair, Inc., local appliance dealership, has added the General Electric line of domestic refrigeration and laundry equipment. The firm also has moved to larger quarters at 74 Orange St.

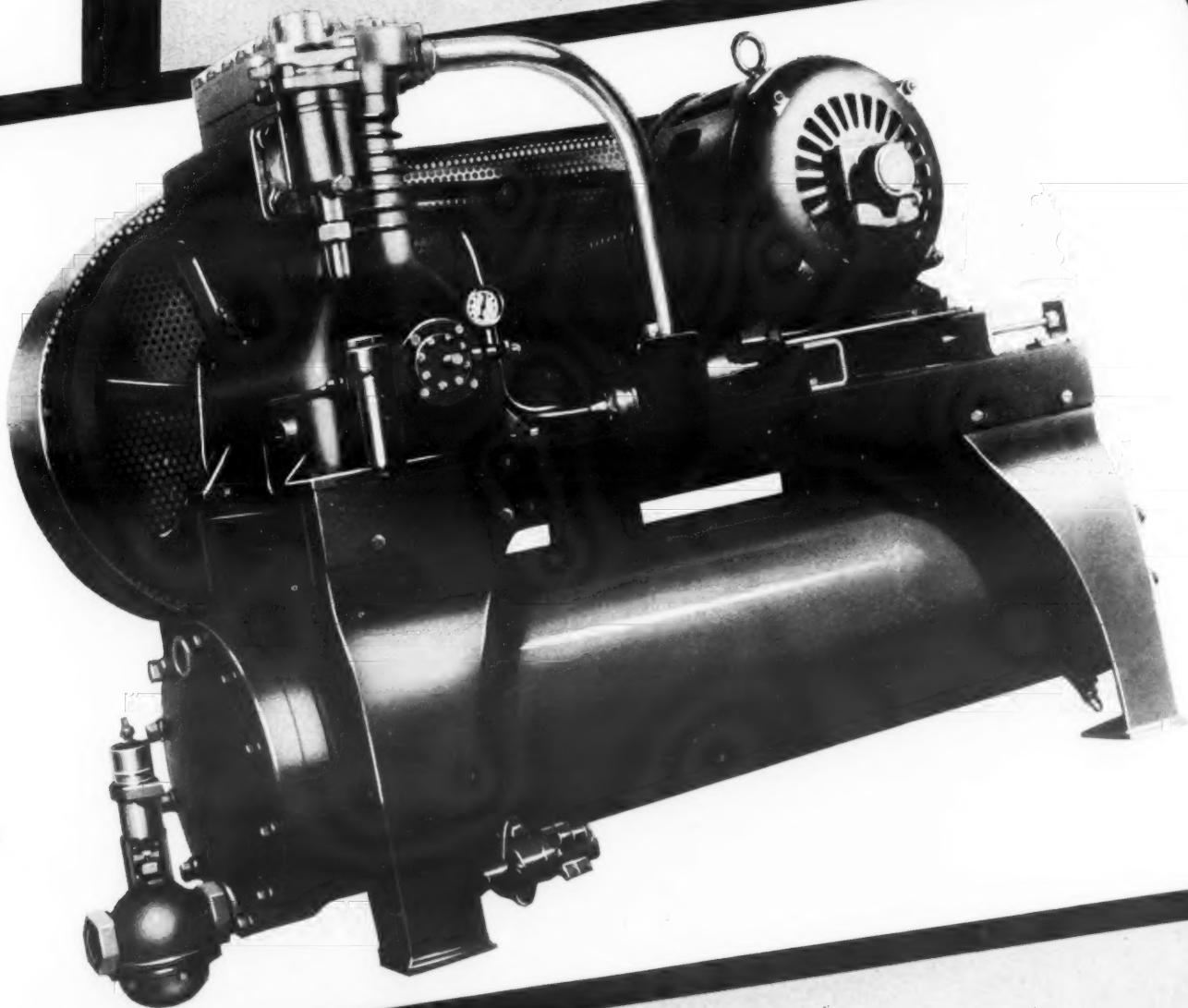
C. G. Brodrick is president and treasurer of the corporation, and Mabel S. Brodrick is secretary. The corporation has \$10,000 paid-in capitalization.

## Hayer to Distribute Ranges And Oil Burning Heaters

MINNEAPOLIS—F. C. Hayer Co., local distributor of Electrolux and Gibson refrigerators and Meadows washers, has acquired exclusive distribution in this territory of L & H electric ranges, and Quaker oil burning heaters.

# HAS EVERYTHING FOR AIR CONDITIONING

This new 15 H.P. Universal Cooler Air Conditioning Condensing Unit is complete in every detail... COMPRESSOR—Heavy Duty... Long Life... Valve-in-head... large valve areas... external oil pump... forced lubrication... extra heavy counter-balanced crankshaft... main bearings diamond bored... SEAL—external bellows and lubricated ring type... CONDENSER-RECEIVER—oversize shell and finned copper tube type... ample pump down capacity... DRIVE—Multiple V Belt.



This Heavy Duty 15 H.P. unit truly belongs to the "World's Standard" Universal Cooler line... more than 16 tons available capacity... low power consumption... slow compressor speed... adaptable to city water service or cooling tower hookup... Other STANDARD FEATURES... Dual pressure control with automatic high pressure cutout... fusible safety plug with vent connection for outside piping as required in Codes... high pressure bypass... water regulating valve... magnetic starter... liquid line strainer... large integral, low velocity oil separating suction chamber... oil pressure gauge... liquid level test cock... oil level gauge.

Capacities certified to the R.M.A. and the N.E.M.A. under American Society of Refrigerating Engineers' standards.



Approved by Underwriters' Laboratories

## UNIVERSAL COOLER DETROIT

OR IN CANADA, UNIVERSAL COOLER CO., OF CANADA LTD., BRANTFORD, ONT.



## AROUND THE WORLD WITH GEORGE F. TAUBENECK

(Continued from Page 10, Column 5)

### Battling the Cartels

When the Cooperative Union was formed in 1899, Swedish business was largely controlled by a few inflated monopolies, which stifled independent competition. Prices on most common products were pegged to suit the profit needs of the cartels, as the monopolies were called, and rose or fell in direct ratio with their dividend desires.

Considerable dissatisfaction existed among consumers over unjust prices charged for even the most modest necessities; and economic thinkers—many of whom are still engaged in executive capacities with the Kooperativa—sought means of reducing prices.

Taking their cue from the English weavers' cooperative venture, a group of Swedish business men organized a few independent societies, which made purchases jointly to take advantage of bulk prices, and manufactured what they could for themselves.

These independent societies decided to merge into a national union, after a few years of experience as separate entities.

Stock, to supply capital for the movement, was bought by members of the combined societies; and annual profits accruing from sales were divided according to each subscriber's percentage of purchases. Total capital of the first Cooperative Union stores amounted to something like \$35,000.

From the first, the Union announced publicly its purpose to destroy, if possible, the price-pegging power of the Swedish monopolies; and to bring prices down within reason. This was a brave move, but a costly one: for almost immediately the cartels combined forces against their tiny and seemingly soon-to-die competitor.

Ever since the turn of the century the battle has been on—at first with the odds 100-1 against the Union, later reduced to an even bet that it would fail, and now running in favor of its dominating, eventually, the Scandinavian economic picture.

That does not mean that cartels are apparently doomed in Sweden, or that capitalistic ventures will be eliminated; but it does mean that the cooperatives are definitely in the ascendant, and that monopolies are being forced to meet cooperative price levels or go out of business.

### Shrewd Adviser

Kooperativa Forbundet was fortunate from its beginning to have had an unusually shrewd and tenacious leadership, backed by the advice of Prof. Gustav Cassel, who is recognized in Europe as one of the foremost economists of the twentieth century.

As the first target for the cooperatives' guns, the Union selected the margarine cartel, which had progressively boosted prices on its product until small householders were almost unable to buy it. Owners of the cartel were formally notified that unless they reduced their prices the Union would enter the margarine business for itself.

Shortly thereafter, Kooperativa took the same tack with the great Swedish flour-milling cartel.

Both monopolies retaliated with boycotts on sources of supply which dared sell to Kooperativa, and prevented their wholesale outlets from trading with the upstart cooperative, claiming that the margarine and flour offered for sale in cooperative stores were cheap, inferior grades. The Union replied by buying its goods abroad and at home on its own initiative, underselling the opposition by several cents per pound.

The fight against the margarine cartel began in 1909, and when the monopoly refused to cut its prices to the cooperatives' level, its sales fell off so badly that by 1911 it was forced to admit defeat and meet the competition on its own scale.

Kooperativa's fight against the flour-milling interests began in 1914, with the usual warning to "cut or take the consequences." This powerful monopoly had sold its product at sky-high prices, and paid huge dividends to its stockholders (33% in 1919). As in the case of the margarine fight, no satisfactory reduction was made.

Cooperative leaders sank every cent they could raise or borrow in a "do or die" fight, which lasted through the four years of the World War.

In 1922 the Union bought the Tre Kronor (Three Crowns) flour mill at the entrance to Stockholm harbor, and started manufacturing its own flour in the most modern mill in the country. Shortly afterward it added the Tre Lejon (Three Lions) mill to its holdings, and increased production.

Prices were cut far below the cartel's former level. Once again the monopoly was faced with failure as sales fell alarmingly. Its directors decided to cut prices below production costs for a time, but the tide of sales was still running toward the cooperative, and by 1924 the cartel was forced to reorganize and meet Union competition.

Encouraged by its unexpected and telling victories over formidable opposition, the Union started price wars against the cartels making and retailing soap, sugar, chocolate, rubber, and other household products.

New societies were added each month, and consumers found that they could buy goods of equally high quality in cooperative stores at lower prices than were offered in the cartel-supplied establishments—almost without fail.

### Psychological Effect

Repeated success in forcing private competition to meet Kooperativa's price levels produced an encouraging psychological effect on the country at large, and during the war years the Union gained in membership and in capital strength.

From a \$75,000 annual turnover in 1904, when headquarters were established in Stockholm for the few member societies, the membership roster grew to 100,000 families in 1913, reached 200,000 by 1917, and by 1923 numbered 300,000, from which point it has almost doubled in the last 14 years.

Today Sweden's Kooperativa Forbundet does between 25 and 30% of the wholesale and retail trade of the country, includes more than one third of the total number of Swedish families (including the Royal Family) in

its membership, and makes 10 to 15% of Sweden's goods in its factories.

### Membership Plan

Membership in a cooperative society was originally secured through buying bonds valued at close to \$3 each. These reached maturity at the end of 10 years, and were redeemed at approximately \$4.50 each.

Several years ago the Union instituted the present membership plan, which is based on the purchase of 10 shares of stock at five kronor (about \$1.34) each.

One share of stock entitles the consumer to be a shareholder and purchase goods in the Union's stores, but without membership privileges or dividends. The great majority of consumers using the Union's facilities, especially families, are members in full standing.

When making purchases, members present their official "booklets" (something on the order of an American bankbook) to the clerk who waits on them. He records the amount of each purchase in the booklet, and collects a stub for record.

These purchase stubs are credited to the member's account, and are applied to the 2% annual dividend declared on the basis of accrued profits. Non-members may apply their accumulated dividends toward the purchase of their membership stock.

### System of Control

Control fundamentally is in the hands of the membership, and emanates from district meetings of Kooperativa's members, where delegates to the annual national convention are elected. The whole of Sweden is plotted into districts, wherein member societies are apportioned delegates, much in the manner of the American governmental system. One delegate represents each 300 members.

General control is vested in a Board of Directors, with a full-time manager. Albin Johansson, present General Manager, has grown up with the movement, and is considered responsible for much of its present success. His salary is less than \$10,000 per year.

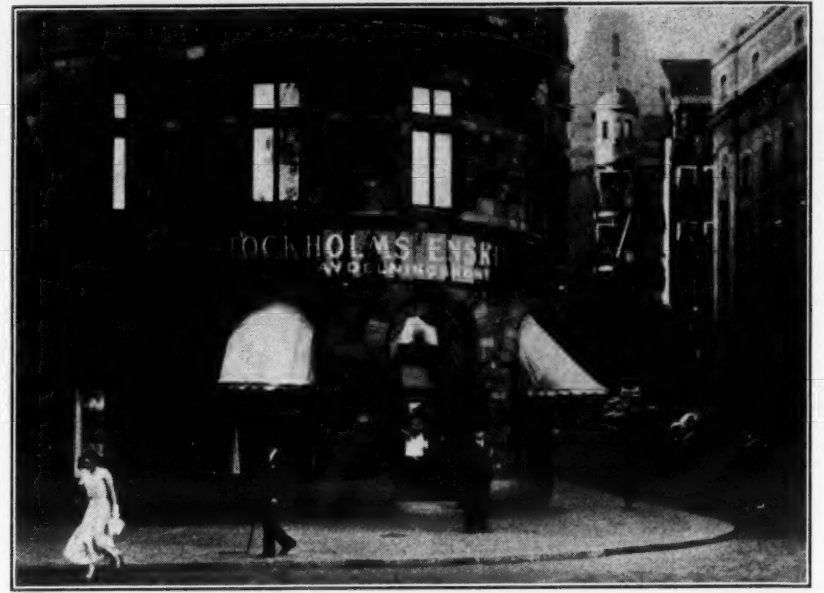
As do American chain stores, the Kooperativa employs general managers for its local stores, and holds frequent district meetings of these managers for the discussion of prices, policies, and profits.

A combined merit and seniority system of advancement is maintained for all employees, and Swedes regard their work with the Kooperativa in much the same manner as do "career" men in the British governmental service.

### Store Appearance

Kooperativa Forbundet's more than 4,000 retail stores are designated simply by the modernistic, lower-case sign, "konsum," which, as an American tourist once remarked, is both a "command to consume and a konsum to command." Courteous service is an unflinching rule.

## Corner of Old Business District



Stockholm's business districts are distinguished as "old" and "new," according to architectural styles. Above is an example of the "old."

"Konsum" signs above flashing chromium-and-glass store fronts are to be seen everywhere in Sweden, from coastal port Malmö in the extreme south, to Kiruna, a good-sized manufacturing town located several miles above the Arctic Circle.

Although fewer in actual numbers than the stores of great American chains like Woolworth's and Kresge's, they have penetrated and saturated the country to a greater and more universal degree.

In the larger Swedish cities like Stockholm, Göteborg, Norrköping, and Malmö, "Konsum" stores are more uniformly modern, having attractive fronts and interiors, chromium trim, tile floors, and scientifically arranged displays.

These stores are prototypes of the "Functionalistic" design of Swedish architecture, which is now sweeping the country, and being employed in all forms of building construction (several pictures of which were published in the December 2 issue of the News).

This architectural movement has found expression in the Union's factories, bakeries, mills, slaughterhouses, and other properties. These are planned to afford sanitary and scientific working conditions, with an eye toward the elimination of all waste space.

Pictures of the earliest cooperative stores in Sweden, which were built about 1900, look something like the American country general store of a few decades ago—a frame structure, no planning, and exceedingly plain.

Some of these, established by pioneers in the heavily forested areas of Sweden, were little more than wayside stalls, where farmers brought their produce to be sold.

The "Konsum" store is generally the center of every village and small town, both as a business place and for social gatherings; and the towns-

folk take great pride in its upkeep.

### Extent of Development

Kooperativa is by no means restricted to the food retailing business. The last annual report of the Cooperative showed sales of shoes, rubber products, chemico-technical products, baked goods and pastries, cement, flour, refinery products, vegetable oils, margarine, textiles, cash registers, novelties, and many more items—all manufactured by the Cooperative Union.

Warehouses in which the Union's goods are stored are located all over the country at strategic points. Its factories are encountered everywhere—from Stockholm, the capital, to outlying villages along the Norwegian border.

Now so firmly established, Kooperativa is continually branching out into new industries and branches of business, the latest of which is the making of rayon from wood pulp produced at home. Close to 40% of all the rayon used in Sweden today is made in the Union's factories.

So meticulous is the management of the project, under Albin Johansson, that monthly cross-checking records are kept by even the smallest stores in the most remote districts. These records are sent in to Stockholm headquarters regularly for a thorough going-over.

### Prices, Taxes, Politics

Prices in "Konsum" stores average between 8 and 10% lower than those offered in independent establishments. This accounts for the huge volume of business done by Kooperativa Forbundet. Volume is further abetted by charge accounts and rapid delivery service.

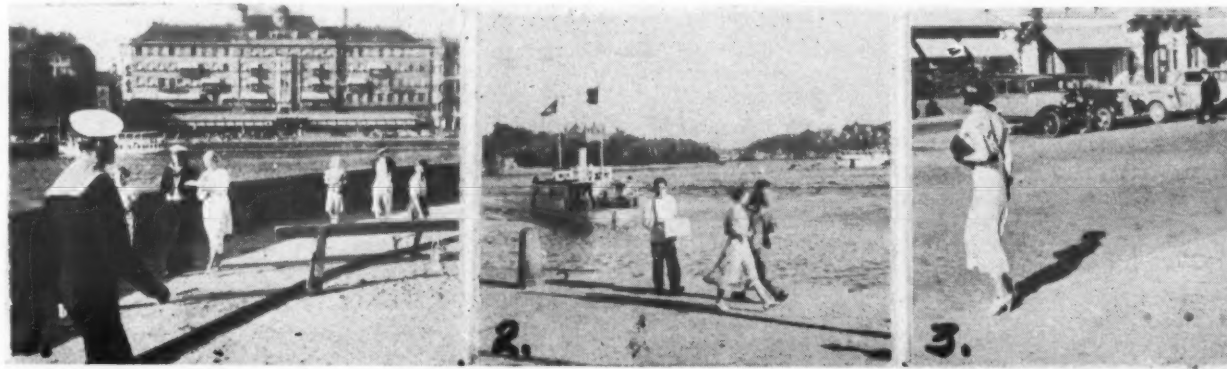
The Union is taxed on the same basis as private enterprise, unlike the British cooperatives, which are granted tax exemptions. This is designed to minimize talk of government favoritism. The movement takes pride in the claim that it has stood on its own feet from the beginning, and has progressed under its own power.

Although it aspires to political independence and non-partisanship, Kooperativa Forbundet is, in reality, tied up with the Social-Democrat party, and with the trade unions in politics.

It should not be assumed from this discussion that the Cooperative under consideration is the only one in Sweden. Kooperativa Forbundet simply is the largest "cooperative in a country of cooperatives." Other organizations of this type are few and scattered, however, mainly being concerned with

(Concluded on Page 13, Column 1)

## Trees, Water, and Space Make Stockholm Delightful



(1) Sailors seem to "belong" to the marine aspect of Stockholm. (2) Small ferries like this constantly ply between sections of the city. (3) Most streets are unusually wide, as in Paris.



(1) and (2) Aspiring willows judiciously landscape Stockholm's many parks. (3) Swedish churches show the French influence in design. (4) Swedish summers are delightfully comfortable, so residents don't need to go to the parks to cool off. But they enjoy the flowers and fountains.



## Around the World

(Concluded from Page 12, Column 5)  
local and specialized industries or crafts.

Besides the "Konsum" stores, it controls, or is associated with, several large insurance companies, housing organizations, building societies, and apartment house enterprises.

Cooperative insurance companies operating under the Union's wing have been unusually successful, having done a \$250,000,000 total volume of business in 1935. "The People," one of the larger Union affiliates, has 150,000 policy-holders, and \$50,000,000 insurance in force.

Cooperative home and apartment building has gained acclaim in Sweden, and several large apartment houses in Stockholm are operated from top to bottom, and in smallest detail, on the cooperative plan.

In 1918 the wholesale cooperatives of the Scandinavian countries—Sweden, Norway, Denmark, and Finland—united to form the Nordesk Andolsforbund, or Scandinavian Co-operative Wholesale, with headquarters in Copenhagen.

This alliance was formed to arrange for mass buying. The North European Lama Cooperative Society, for mutual trading, was organized in 1931 by the same four nations.

## Cleveland Wholesalers Draft Practice Codes

CLEVELAND—The executive committee of the Cleveland Wholesale Appliance Association last week appointed four sub-committee chairmen to draft standard practices for each of the major appliance lines, and elected Paul Lies, an attorney, as executive secretary to succeed George W. Walker.

Originally intending to set up standards for refrigeration, the committee decided last week to transfer the work to specialized groups.

Committee chairmen are: refrigerators, H. H. Kennedy, Frigidaire Division, General Motors Sales Corp.; gas ranges, J. A. Kirby, American Stove Co.; laundry equipment, J. A. Fitch, Maytag Sales Co.; and radios, Robert Lewis, General Electric Supply Corp. Chairmen are authorized to select their own committee members.

In selecting Mr. Lies to replace Mr. Walker, distributors made it plain that there is no break with the Retail Appliance Dealers Association, of which Mr. Walker also is executive secretary.

## Rex Cole Withdraws From Retail Field

NEW YORK CITY—Completion of a new sales policy under which Rex Cole, Inc., General Electric distributor, has withdrawn from direct retailing of appliances through controlled stores was announced last week by President Rex Cole.

Of the 30 retailing outlets formerly controlled by Rex Cole, Inc., 10 have been liquidated, and the other 20 are now controlled and operated by men who formerly managed them for the distributing organization, Mr. Cole said. These outlets will continue to handle G-E products exclusively.

Sales and showrooms at 570 Lexington Ave., in the General Electric building, will be maintained by the Rex Cole organization primarily for institutional purposes.

Milton E. Haas, who managed the Rex Cole resale department at R. H. Macy & Co. until its recent dissolution, has been named manager of department, furniture, and chain store sales for the distributorship.

## F-M Opens 'Spring Fever' Home Laundry Sales Contest

INDIANAPOLIS—A "Spring Fever" sales contest, designed to stimulate wholesale washer and ironer sales, has been announced by L. M. Decker, sales manager of the home laundry equipment division of Fairbanks, Morse & Co.

This factory-sponsored contest is open only to wholesale men. Each distributor is to apply the rules of the contest to his own organization, although the factory will furnish all necessary materials and awards.

## Benson and Nofzinger Join Gibson Engineering Dept.

GREENVILLE, Mich.—R. L. Benson and E. E. Nofzinger have been added to the engineering and development department of Gibson Electric Refrigerator Corp.

Mr. Benson was formerly connected with both Westinghouse and Frigidaire. Mr. Nofzinger left the employ of Douglas Aircraft Corp. to accept the position with Gibson.

## Hotpoint Begins Promotion Of All-Electric Kitchens With Design Manual

CHICAGO—Publication of a comprehensive Kitchen Design Manual by Edison General Electric Appliance Co., manufacturer of Hotpoint major appliances, marks the entrance of Hotpoint into the all-electric kitchen field.

The Manual is the first step in a program to aid utilities and dealers in planning and laying out modern all-electric kitchens. In a letter accompanying the manual, Hotpoint states definitely that it is not designed as a promotion piece, but is intended for the use of individuals who are actually laying out new or remodeled electric kitchens.

Instead of setting up a central planning service here, the letter says, it will be Hotpoint's policy to encourage dealers and utilities to create their own kitchen planning departments. Hotpoint's Kitchen Design Division will act only in an advisory capacity, assisting in personnel training on kitchen planning, and advising dealers on specific installations.

The new manual deals with such fundamentals of kitchen planning as cabinet storage requirements, kitchen

arrangement, color, preparation of plans, and major equipment installation. Numerous charts and pictures are included. Prominently featured is the Hotpoint Thrift Kitchen, but other manufacturers' names and materials are freely mentioned.

A special service is available for commercial kitchens.

## G-E Sales Billed Total Up 29% for 1936

NEW YORK CITY—At a meeting of the board of directors of General Electric Co., held recently, the preliminary results for 1936 were presented, showing sales billed amounting to \$268,545,000, compared with \$208,733,000 for 1935, an increase of 29%.

Orders received for 1936 amounted to \$296,748,000, compared with \$217,362,000 for 1935, an increase of 37%.

Net income for the year, after all charges including provision of \$300,000 for federal surtax on undistributed profits, amounted to \$43,947,000, an increase of 58%, and was equivalent to \$1.52 a share of common stock, compared with 97 cents a share in 1935. The increase was due, in part, to an increase in income from investments.

## Norge Ironers Dry Out Water-Soaked Records In Flooded Regions

HUNTINGTON, W. Va.—E. H. Diehl Co., Norge dealer, took advantage of the clean-up period following the recent flood to do a flourishing ironer business among banks, trust companies, and large industrial firms.

When the flood water subsided, many of the city's banking firms and other companies found their records, currency, bonds, and securities badly waterlogged. To help them get things back to normal, the Diehl Co. offered Norge ironers on either a sale or rental basis.

Four ironers were rented to the First Huntington National Bank, two to the Twentieth Street Bank, and one to the Huntington Bank and Trust Co. International Nickel Co. and Jeffery Dewitt Insulation Co. purchased ironers outright, and the West Virginia Rail Co., faced with a 30-day ironing job, rented two ironers.

Another ironer was sold to a Pittsburgh vault man, who took it with him to New Orleans, stopping at points along the way to iron out his bank customers' money and records.

## Stewart-Warner 5-Month Sales Increase 89%

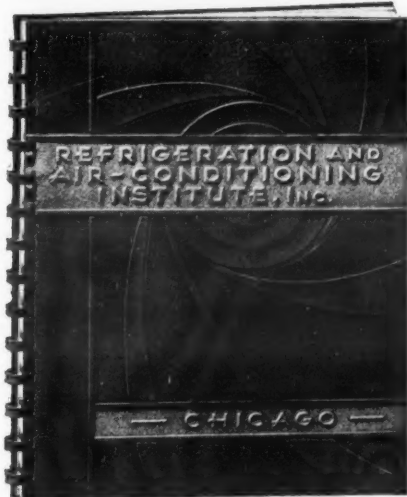
CHICAGO—Refrigerator sales of Stewart-Warner Corp. from Oct. 1, 1936 to Feb. 28, 1937, were 89% larger than those for the corresponding period of the previous year. For the year ended Dec. 31, 1936, refrigerator sales were 130% greater than those for the year ended Dec. 31, 1935.

The corporation's radio sales from Oct. 1, 1936 to Feb. 28, 1937, showed a 170% gain over those for the corresponding period in the preceding year. Radio sales for the entire year of 1936 slightly more than doubled those of 1935.

## Crosley Issues Refrigerator Specifications Folder

CINCINNATI—Crosley Radio Corp. has issued a complete refrigeration line folder, containing illustrations and specifications of all models, in connection with the preliminary showing of its 1937 refrigeration line.

Designed to be used by dealers as a wall or window poster, or as a direct-mail piece, the broadside stresses Crosley's five-point refrigeration platform—beauty, economy, convenience, capacity, accessibility.



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*Ray B. Smith*  
PRESIDENT



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Sturtevant  
Sunbeam  
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Universal Cooler  
—and others

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## Rural Market Expands

COMPLAINTS that there are too many dealers are heard less frequently these days. Apparently distributors and manufacturers' field representatives have come to the realization that the idea of appointing every gasoline filling station, mortuary establishment, and shoe shining parlor with a credit rating as an officially enfranchised dealer has its bad points.

Nevertheless, the complaints are still heard occasionally, along with the charge that competition between dealers is so fierce in some quarters that all the profit has gone out of business. To dealers in a predicament of this sort, the NEWS suggests:

Go back to the farm!

For a number of years the farm market has been sadly neglected, according to sales analysts in the offices of several manufacturers. Earlier, the industry did a pretty thorough job of coverage, especially on milk-cooling equipment; but of late, the farm market hasn't been taken much into consideration.

Sales managers have declared that, the profitable milk-cooling market having been fairly well cultivated, it was no longer worth while sending salesmen out to the widely scattered prospects in the rural field. And dealers, with their eyes on the concentrated markets of their own municipalities, have taken their cue from observations such as these.

But this year the picture has changed. Sales managers must change their notions about saturation of the farm market, for in 1936, the impressive total of 85,000 new rural customers were added to the nation's power lines! What's more, utilities have estimated that more than 160,000 more farms will be electrified during 1937! These figures compare with 4,000 newly electrified farms in 1933, 30,000 in 1934, and 56,000 in 1935.

In the three years ending in December, 1937, more than 300,000 new farm homes will have been added to the public utility lines. All of these will have electric lights; many will have radios; some will have electric motors for pumping and other power purposes; a very small number will have purchased washing machines; still fewer will have invested in household refrigerators, milk coolers, and other refrigeration equipment. It is a safe bet that practically none will have installed air-conditioning equipment.

Here, then, is a brand new market. Most dealers haven't waked up to its existence. Competition for this business is anything but keen, and the field seems wide open for enterprising dealers and salesmen.

For example: a New York utility which did an excellent job of rural electrification in the first half of 1936 reports that an infinitesimal portion of its new farm customers have purchased electric refrigerators or other appliances. All of them have electric lights, although they don't consume much juice because they go to bed so early. Most of the farmers' wives have come to town and bought electric irons. But that's about as far as it has gone.

Late in the fall this utility—which does not engage in the sale of appliances—arranged for a series of home economics demonstrations for farm families to be held in community high schools, in the interests of promoting appliance sales. All the new, as well as the old, farm customers were invited. The sessions were well attended.

But appliance dealers signally failed to take advantage of the opportunity thus afforded them. Each dealer in the respective territories was invited to come to the demonstration, and to bring his products and his salesmen. The few who accepted the invitation soon lost interest in the undertaking, and did not follow up the prospects they uncovered at the demonstrations.

One reason for the apathy toward the farm market is that it takes a deal of old-fashioned selling. Farmers and their wives have not had their resistance lowered by the cumulative effect of a continual barrage of national advertising. They have not listened to the presentations of cold canvassing salesmen. They have not had the opportunity of having their envy aroused by seeing major appliances in the homes of friends and neighbors. In the case of electric refrigerators, the need for adequate refrigeration must be sold to them.

To the real salesmen, this situation is simply a challenge. To the chiseling type of dealer, the one who sells by raising the ante on the discount or the trade-in allowance, the rural market seems too tough to tackle.

No matter what we may think of the New Dealers otherwise, it must be admitted that they have helped create this new market. In the first place, farm income has been increased through AAA benefit payments, the soil erosion program, debt moratoriums, seed loans, and other moves which have tended to boost prices.

More than that, the Rural Electrification Program has proved the impetus for the amazing increase in wired farm homes during the last two years. It is expected that by the end of 1936 the Rural Electrification Administration, with the cooperation of utilities, will

have increased the percentage of wired farm homes to better than 33% of the nation's farms (only those with improvements valued at \$500 or more are considered in this figure). This would be a total of more than 1,000,000 farm homes on meters.

The utilities, naturally, are highly interested in raising the present low consumption of current on the part of these customers. In 1936, the power companies invested \$193 per customer in new lines, and \$73 per customer in meters and transformers. The R. E. A. projects, it is estimated, will serve 3.54 customers per mile, and cost \$1,111 per mile. Thus taxpayers, as well as utility stockholders, are acutely interested in the movement to make these new customers self-supporting by the sale of appliances.

The dealer who goes out to get this type of business will find he can have all the cooperation he wants from his local utility, and from his Farm Bureau, or other government agency, in locating farm prospects and helping sell them. Basket suppers and entertainments can be arranged, trailers and "traveling kitchens" can be employed, and government farm advisers can be recruited in the attempt to spread the story of the benefits of refrigeration.

Here's business for the man who wants to go after it—not easy business, to be sure; but business with a profit, and without so much chiseling competition.

## — LETTERS —

### An Outsider Contributes Some Muddled Thinking

18260 Monica  
Detroit, Mich.

Editor:

To be quite honest, I have never dealt in refrigeration and know very little about it. I have however followed your travelogs and editorial comment from time to time through the medium of an old friend of mine who receives your journal.

I realize the freedom that should lie in an editorial column, freedom of thought and of personal expression. And with these, the responsibility. To speak to your readers of things they should be aware of and understand, to speak your own opinion and interpretation of the movements in the field you serve.

I have in mind your editorial of Feb. 24—"Goodbye to Our Birthright." What a strange combination of observation and oratory it is!

"... A dictatorship has as its purpose the organization of an entire nation into a compact unity for making war on another dictatorship..." History teaches us that the forces of dictatorship inevitably become too strong even for the dictator, and that they lead invariably to war, eventually to self-destruction."

My dear Taubeneck, your statements would seem to allow no exception, no alternative. Has every dictatorship been thus planned and proved? Some of us can look back as far as 1900. Perhaps you cannot, from actual experience; but there are textbooks. Has every dictatorship even since that brief time been so summed up and so labeled by history?

The law of a dictator allows no royal family of succession to power except by another figure who must be, shall we say, strong enough at least to carry on the measures struck by his predecessor. How often has this happened?

I'm not looking for a historical treatise to answer these questions. You, an editor, are a busy man; this might be a task for a scholar. I ask only why you should quote inaccuracy after inaccuracy instead of mere exaggeration.

Nor am I rising in defence of Roosevelt. The question of the Supreme Court indeed is vital, as you have said. And I agree with you that ours probably is the most democratic form of government; even though it may emerge far from democracy in the way we administer it. These are political theories in which every man may have an opinion even if not a voice.

But what has all this got to do with air conditioning and refrigeration, to quote your own question. "Because factories will be turning out machine guns instead of compressors, and salesmen will be carrying rifles

instead of portfolios," you say. Just how does that follow, sir? Now that you return to relate all this to air conditioning and refrigeration, where are your facts?

You will remember the pink slip episode shortly ago, occasioned by the government's suggestion that, in effect, all income tax returns be placed on public file. Congress was so deluged with the pink slip of protest that the bill was dropped before the next legislative step could be taken. What parallel to this do you find in the courses of our present European dictatorships? Our own nation stands upon a fundamentally different basis and structure, the forces of legislation are quite differently formed. Yet you, an editor, are able blithely to compare them without qualification.

Political prophecies are purely matters of opinion, to which you have every bit as much right as your readers. And political prophecy was what you were dealing in your editorial, was it not? That is up to you; I take no stand to prove the political winds. I question rather your concept of editorial responsibility, your treatment of fact. If you must roar, why not make it relevant?

Your editorial policy, I grant again, is quite your own affair. I see no protest in your column of letters from readers—or don't you print those? It seems odd that no one ever questions your well-pleased confidence. Even the blotting-paper mind to which you refer in your editorial must have its saturation point.

If you write with your tongue in your cheek, as it sometimes is a little difficult not to believe, that much less is to be said for you. Your "Around the World" columns are quite in ethics with your public or private humor. The editorial column, I think, is not the place for it. For there are many of us and will continue to be many of us who read your editorial comment as the analysis of one who, from his position and a study of current affairs, is sincere in what he says even if he doesn't always know what he's talking about.

If on the other hand you do believe that your political byblow is more to the point than orderly business discussion, that I suppose is your publisher's risk. Personally, I feel that you are missing a trick.

DR. LEIMAN MCINTEE

Answer: The self-challenging vagaries of this letter deserve answering only because they are indicative of the muddled thinking—the addled state of mind—which seems to prevail in so large a portion of the nation's population today.

Exactly what Prof. McIntee is driving at is rather difficult to determine, even after several readings of the letter, so abstruse and indeterminate is the style. He knocks down several duckpins, only to set each one back up again himself.

As nearly as we can make out, the only animadversion he's really sure of is his belief that the editorial was not germane to the chief interests of the paper or its readers.

Having declared at the beginning that he has "never dealt in refrigeration" and that he is not a subscriber, Dr. McIntee automatically disqualified himself from the right to deliver any such judgment!

He gets close to something, albeit unconsciously, when he notes that he sees "no protest in your column of letters from readers." (The NEWS does print such criticisms and protest, as every subscriber knows).

As nearly as the editors can determine from personal contact and observation, the reason that howls of protest from loyal Roosevelt supporters have not been mailed us is that the NEWS is voicing editorially a sentiment which is representative of enlightened business thinking throughout the industry.

In that we are writing largely to an audience which agrees with us in principle, the effort may appear to be a bit futile, although we do believe we are rendering readers a service by putting their feeling into words they can quote.

By citing the "pink slip episode" Dr. McIntee misses the point of the editorial entirely—and it is that statement which we set out to set right in the first place.

It is his argument that this episode proves we are not living under a dictatorship, as known and practiced in Europe today. Exactly! And it is that democratic right of protest which the NEWS sees endangered by the President's pack-the-Supreme-Court plan.

We are not living under a complete dictatorship now; nor is it necessarily true that suppression of free speech and other democratic prerogatives of which we are so jealous will follow after Roosevelt has succeeded in bending the rest of the government to his will. But the machinery for dictatorship will have been set up; its actual accomplishment will be all too easy, and the temptation to make use of such totalitarian powers will be extremely difficult to read.

As Dr. McIntee himself says, "the question of the Supreme Court indeed is vital." We repeat that it is the most important issue which has faced any present American citizen during his lifetime.

## The News Isn't Edited For Libraries

Climax Machinery Co.  
121 to 153 E. Morris St.  
Indianapolis, Ind.

Mar. 12, 1937

Gentlemen:

May we call your attention to the fact we believe your magazine would be considerably more valuable to your subscribers if it were published in a size that would enable us to file it? Due to the size of the magazine it will not fit our regular files and it is tossed around in the office and finally thrown away as it is too large for filing purposes. This merely for your information.

ARCH H. OLDS,

Sales Manager.

Answer: The NEWS is "written to be read on arrival" and the 5-column tabloid newspaper has greater readability than any other available format. We can do little about what happens to a copy of the NEWS after it is read by the subscriber, although we do furnish binders (\$3.75 plus delivery charge) for those who want to preserve their copies.

Years ago we learned a good rule for publishers: "Don't edit your paper for librarians."

## French Edition of Commercial Manual

American Consulate  
Nice, France

Mar. 3, 1937

Gentlemen:

Acknowledging the receipt of your letter of Feb. 18, 1937, I am pleased to transmit the three booklets furnished to persons believed to be interested in AIR CONDITIONING AND REFRIGERATION NEWS.

In answer to your question, in view of the growing interest in France in refrigeration, I am of the opinion that the French edition of the "Commercial Refrigeration Service Manual," would find a certain number of purchasers in this area.

PAUL C. SQUIRE,

American Consul.

## Information Sought On Permanent Exhibits

Refrigeration Supplies and Parts  
Manufacturers' Association  
2707 David St Bldg.  
Detroit

Mr. Cockrell:

In line with my recent telephone conversation, I wrote to the Procurement Division, Washington, D. C., asking for information on their permanent exhibits. Following is a letter received in reply to mine:

"Receipt is acknowledged of your letter of Feb. 4, 1937 in which you state that you are attempting to collect all possible data in connection with permanent exhibits, and since you have been informed that such exhibits are maintained by the Procurement Division you would appreciate information relative to cost, maintenance, and degree of satisfaction.

"The Procurement Division, Public Buildings Branch maintains an architectural library which shows different types of building materials. However, this is the only permanent exhibit in connection with the work of the Procurement Division. The Branch of Supply maintains a sample room which cannot be considered as a permanent exhibit since samples are held only during the life of a contract and are for reference in establishing compliance with accepted materials under a particular contract. There is no data available as to cost or maintenance of exhibits of the character in which you are interested."

If you have been able to obtain any information in connection with the subject, I would appreciate your advising me.

FRANK J. GLEASON,

Executive Secretary.

## Refrigerators a Novelty In Scotland

American Consulate  
Dundee, Scotland

Mar. 4, 1937

Sirs:

This office is in receipt of your communication dated Feb. 18, 1937 regarding American refrigeration and air conditioning, and I have distributed the booklets in town.

Should any inquiries be made, it will be a pleasure to inform you immediately, but the climate of this section of Scotland is so mild and equable that I do not believe there is much chance of selling air-conditioning equipment. Few houses have even central heating, and electric refrigerators are still a great novelty here.

E. TALBOT SMITH,

American Consul.

## From Land of St. Patrick

51 Phibsboro Rd.  
Dublin, Irish Free State

Editor:

Please enter my name on your list of subscribers. I am ten years in automatic refrigeration and think your paper great.

Don't forget to send me the "Red Book."

JOSEPH G. CROOKS



## - AIR CONDITIONING NEWS -

### Kelvinator Develops Gas-Engine Operated Bus Air Conditioner

(Concluded from Page 1, Column 1)  
ern air conditioning and refrigeration is based, is now making a three-months' southern tour for demonstration purposes.

#### PARTS OF SYSTEM

The air-conditioning system, thought to be the only one of its kind, consists of compressor, air cooled condenser, direct-expansion coil, and air-circulating fan, both the refrigeration unit and circulating fan being belt-driven by a constant-speed, continuously operating gasoline engine. Freon is used as refrigerant.

Located at the rear of the coach body, the unit draws outside air from the front of the body through a suitable intake duct and air filter, and discharges the cooled dehumidified air downward from air-supply ducts which are built into the overhead luggage racks. The air-stream entering the conditioned interior is so deflected over horizontal "mush-room" plates that discomfort and complaint from drafts is claimed to be entirely eliminated.

#### UNUSUAL CONTROL SYSTEM

Operation of the controls is unusual in that although operation of the mechanical apparatus is continuous, the refrigerating effect is used only when required for maintaining desired interior conditions. Yet this effect is obtained merely through a unique arrangement of conventional controls.

Controls function as follows:

When the inside dry-bulb temperature has been reduced to the setting of the thermostat, the thermostat breaks the circuit too, and closes a solenoid-operated shut-off valve in the liquid refrigerant supply line, thus stopping the circulation of refrigerant, and the refrigerating effect of the air-cooling surface.

After the solenoid valve closes, the continued operation of the compressor pumps all refrigerant from the "low side," to be condensed in the condenser and returned to the liquid refrigerant receiver. When the continued compressor operation reduces the suction pressure to the setting of the standard low pressure control, a solenoid-operated refrigerant by-pass valve is opened to equalize the head and suction pressures so that the load on the compressor is removed except for the nominal friction loading.

#### RESTARTING CONDITIONING

The compressor idles in this manner, with the refrigerating effect held in abeyance, until the rise of interior dry-bulb temperature closes the thermostat, opening the solenoid-operated liquid refrigerant supply valve to restore refrigerant circulation to the air-conditioning surface.

The resultant rise in suction pressure closes the solenoid-operated valve in the by-pass connection between the compressor suction and discharge through the action of the low-pressure control, so that the compressor functions until the next off-cycling of refrigerating effect due to thermostatic action.

#### OFF-CYCLE OPERATION

During the off-cycle, the gasoline engine continues to operate at light load under its constant speed control. In the event of excessive head pressure due to restriction of condenser air supply, or other causes, the automatic high pressure safety cutout closes the liquid refrigerant supply valve in the same way that it is closed by the interior dry-bulb temperature actuated thermostatic control as described above, resulting in the off-cycling of refrigeration as described above following the closing of the liquid refrigerant valve.

In this way possible damage due to excessive head pressures is prevented.

Hand switches are furnished for opening the by-pass solenoid valve to unload the compressor during starting, and for grounding the magnet to stop the engine.

For the comfort of these passengers, the air-conditioning equipment described cools and dehumidifies a complete change of air every three minutes.

### Skinner Builds Good Business Making Cooling Coils for Odd Sized Applications

ST. LOUIS—Skinner Heating & Ventilating Co., manufacturer of surface contact cooling units, year-around air conditioners, air washers, fans, and sheet metal ductwork, has built up a good business building coils to fit odd-sized applications in air-conditioning jobs, reports W. A. Russell, sales manager.

The company operates a metal fabricating department which makes coils to fit individual contractors' specifications, Mr. Russell says. Installations of such specially built equipment have been made in the Lennox, Jefferson, and Statler hotels in St. Louis, as well as in private homes in various parts of the city.

### Cook to Install G-E System For Providence Trust Co.

PROVIDENCE, R. I.—E. Pulver Cook, Inc., 72 South Main St., has been awarded the contract for installing a year-around air-conditioning system in the trust department of the R. I. Hospital Trust Co. here. General Electric equipment will be used.

### Bauer Covers Connecticut For Delco-Frigidaire

HARTFORD, Conn.—Walter R. Gunberg and Herbert M. Soule have been named vice president of Bauer & Co., Inc., which recently became Connecticut distributor for the Delco-Frigidaire Conditioning Division of General Motors Corp. The company is setting up a sales engineering staff to assist dealers throughout the state.

Mr. Gunberg has been with the Frigidaire division since the early days of its distribution in the Hartford area, for some years as manager of the Hartford branch, and more recently as zone manager for the commercial sales, representing the factory in Northeastern states.

Mr. Soule, who will head the new construction and contracting department, has been with Bauer & Co. for 17 years, supervising electrical work on some of Hartford's largest building projects. D. C. Hildebrecht will direct the activities and engineering of the heating division. W. E. Quimby will be general service manager, and H. W. Hamblin will have charge of kitchen modernizing promotion.

In addition to contracting and the sale of heating and cooling systems, the company handles household Frigidaire units, electric ranges, water coolers, commercial refrigeration equipment and small appliances.

### New Carrier Portable Was Tested in Brazil

NEWARK—Rather than delay development of its new portable air-cooled room-type air conditioner by waiting for next summer to bring its heavy cooling load conditions here, Carrier Corp. has "gained a climatic year" on progress by taking the unit down below the equator in quest of the hot, sweltering jungle summer weather of Brazil.

There it is said that actual installations of this type of unit have been tested by operation under field conditions much more severe than normal summer conditions in the United States. It is reported that a number of installations have been made also in offices in Rio de Janeiro.

The new conditioner is a completely factory-assembled self-contained unit, requiring "no more installation work than an electric refrigerator," to use the words of the Carrier development engineers. The new model will sell for \$395, f.o.b. factory.

Exterior appearance is similar to that of a radio cabinet. The unit is equipped with an extension cord for plugging into the conventional electric wall-plug, and has large rubber-tired casters so that it is easily portable.

able. Felt pads are provided also for placing under the casters when the unit is in place.

An adjustable window duct is furnished, for connecting to any ordinary window opening. Air is drawn in through this opening, filtered, and passed over the cooling and dehumidifying surface, so that fresh air is delivered into the room cooled and dehumidified.

The condensation resulting from the moisture, removed from the air, drips from the dehumidifying surface into a drain pan below where it is used to assist in cooling the refrigerant (Freon).

Low noise level, suitable for bedroom service, is claimed for this conditioner, as a result of the following features:

Rock wool lining for entire interior of cabinet. This insulation also prevents the exterior of the cabinet from being chilled below the temperature of "sweating."

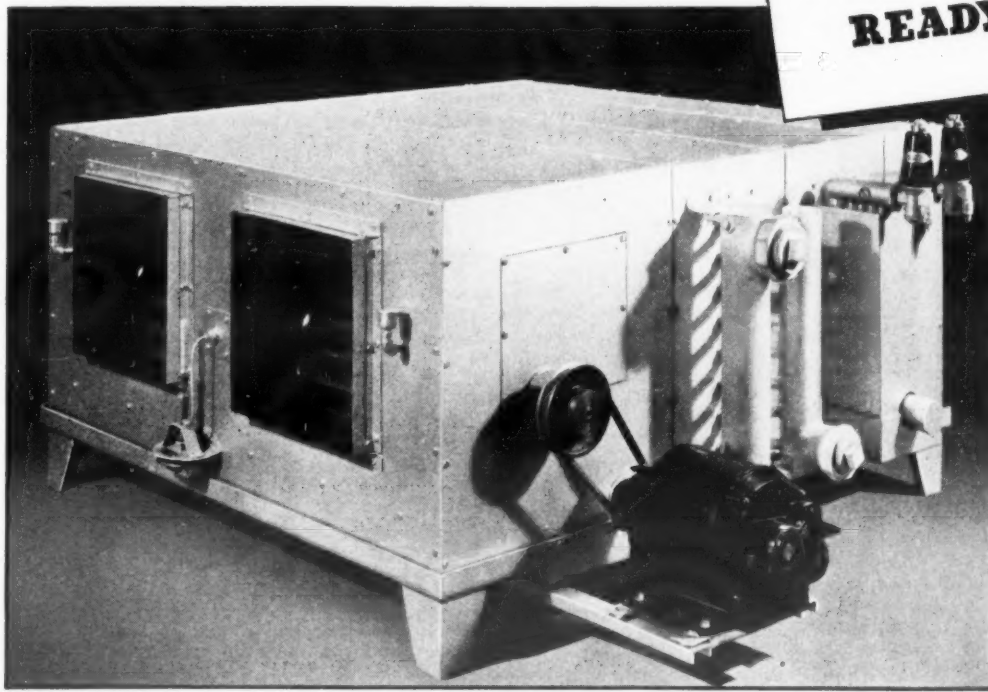
Sound absorbing fan discharge chamber.

Vibration eliminating spring mountings for all moving parts.

Added to the effect of these features is the fact that windows remain closed, and that the constant speed fan maintains an unvarying air delivery at all times.

## FEDDERS All Season AIR CONDITIONING UNITS

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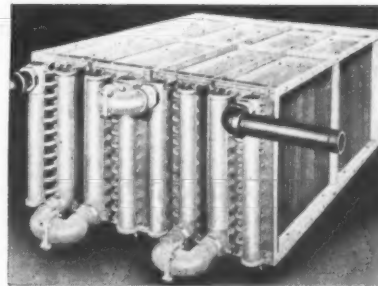
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Buffalo, N. Y.

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## Curb Land Speculation to Make Farming Safe and Electrification Possible, Says Utility Executive

William E. Clement  
317 Baronne Street  
New Orleans

Mr. Taubeneck:

I read with interest your Netherlands story, my attention being specially drawn to Mr. Altes' (G. E. distributor) sage remark that "artificial methods of economic control merely postpone the crisis" and thought I would take a chance and write you a few lines.

In this connection I enclose a copy of my recent address "Rural Electrification and Farm Land Taxation," which as you will see, substitutes natural methods for artificial, and goes to the fundamentals of such things as are later discussed by your paper in its rather outstanding editorial—"Public Relations," and under the heading, "Long Neglect Penalized."

I do hope Mr. Taubeneck that you, with your keen analytical mind, will read this thoughtfully in the light of what is happening today, and consider the absolute necessity for "economic research"—to supplement and keep going the scientific research which has been so successful in getting us where we are today.

W. E. CLEMENT.

It is desirable that those of us who are interested in the progress of rural electrification, which is dependent upon farm purchasing power and the general welfare of the farmer, look beneath the surface and make some study of the conditions that retard such progress.

The economic significance of this problem as affecting not only the farmer, but industry's security and further progress is momentous.

In any discussion of social justice problems, we must assume as a goal a "Satisfied Relation" of the various elements and forces at work in the economic and social set-up under consideration.

In the realms of physics and chemistry, the existence of various forms of matter is due to a more or less permanent "satisfied relation" of the atomic and molecular structure of the matter in question. High explosives are good examples of a temporary "satisfied relation" of atomic structures that are easily upset by a slight amount of interference. Such structures are highly destructive when disturbed.

In order therefore to secure a permanent satisfied relation of our social structures, the various component parts or atoms must be fitted into a permanent satisfied relation, resembling in analogy such simple chemical structures as water, common salt, silica and carbon dioxide, which are not easily decomposed. Temporary social and economic solutions, comprising unstable elements as component parts, may present an apparent "satisfied relation," but the least disturbance proves them to be highly explosive and unstable.

Before we can have a stable and more permanent society, we must stabilize the "farmer." In the last analysis this means settling the deeply fundamental farm land problem. Can this be done? It can.

There is here proposed a plan based upon natural law, which by a tax adjustment feature effects an orderly economic development, electrification, and more satisfactory use of our rich and productive farming country by people who want to farm. Gradual abandonment of uneconomic and sub-marginal lands to their original grazing status will for the same reason automatically follow.

Under the presently accepted obsolete, unfair and admittedly unsatisfactory farming system, only about one half of our farming people could in justice to themselves pay for much needed modernization, wiring and equipping their farms with the necessary electrical appliances, etc., or use enough service to justify pole line extensions to serve them.

Electricity, it has been said, quoting from the "New York Times" reporting on the Third World Power Conference, "puts at the disposal of the farmer untold thousands of invisible

hired men, who help him run silage machinery, his dairy plant, his tool shop, his incubators and brooders; milk his cows, lift his hay, light his barns, destroy flies, control insects and plant diseases, and do scores of other operations that cut costs and could have important consequences in regaining foreign markets, increasing consumption, and providing more leisure and a higher standard of living."

In addition to electrical cooking, refrigeration, and laundry apparatus—to say nothing of the now almost indispensable radio—there is now being developed equipment which when perfected, it is thought, will be of even greater help to the farmer.

Under favorable conditions such as are herein proposed, there is no doubt that farm machinery and production will take a different form, as "farming communities" tend to bring farmers closer together. Still greater strides may then be made through specialized invention, as electricity is brought to a major portion of the 85% of farms not now supplied.

R. Borlase Matthews, consulting electro-farming engineer, British delegate to the Third World Power Conference, says:

"I make no effort to hide the fact that I am, first of all, a businessman; secondly, a farmer. And as a result of thorough research into all phases of farming, both as a practical tiller of the soil and as an economist, I have reached the definite conclusion that agriculture and electricity must be inseparable if the farmer is to prosper as he should. \* \* \* On my farm I use electricity for 65 different purposes, but on the farms I have visited, I have seen more than 300 actual applications of electricity to farming."

Contented farmers, are after all, the best citizens, and they are the fundamental wealth producers of the country. Contented and industrious men engaged in producing their own living, do not need much government.

Every serious depression in the past, with accompanying frightful toll of farm losses, human misery and near wrecking of our national economy, has first been preceded by a gradually accelerated tempo of farm land speculation with resultant driving up of costs for the mere right to farm and finally bringing down on the speculative element and bona fide farmers alike a frightful collapse with repercussions in every direction. Share-cropper troubles are only one of the many symptoms of underlying bitterness and unrest in our farming situation.

The destructive effects of this gradually rising land speculative fever on the farmer's economic situation is now better understood, and recently government officials conferred with insurance men and others in an effort to keep down loans on farms. Unless, however, the rules of the game are changed, the "same causes will bring about the same effects."

The suggestion impossible to enforce is now being put forth by our government to "keep loans level to sale value and to avoid speculative excesses in farmlands or 'land booms.'" Fair words, but absolutely meaningless unless these things are made impossible by a change in our present stupid and inept system.

The Securities Exchange Commission, (S.E.C.) with a strong hand, requires a 55% margin, brokers' reports, etc., on stock speculative and "margin" accounts,—threatening even to go further, whereas 10 or 20% down and no regulation has a tendency to encourage the farmer, and worse still, the farm land speculator, to take part unknowingly in a far more destructive and strangling gamble as far as the basic and best interests of the country are concerned.

Skyrocketing farm land prices rising from an easily-carried low of around \$25 an acre or less to sometimes around \$500, and then falling as demand falls off and commodities recede in price, leave not only land-owners and bankers, but worse yet, the poor tenant farmers in an almost "untenable" position.

Dr. Will W. Alexander, assistant resettlement administrator in the former Dr. Rexford G. Tugwell's department, says of the tenant problem:

"We must have a long time slow program. If you handed most of the farmers land, they couldn't keep it unless they had guidance and supervision. If I had money either to buy land or give work supervision, I would spend it on the supervision instead of the land."

This is all no doubt true; wise "supervision" is always helpful, and the Doctor is on firm ground when he opposes giving these people land when all they need is a fair opportunity to help themselves.

Unless land prices at "anticipatory" heights and the gambling feature with its "strangling" deadening and business killing feature with its "strangling" deadening and business killing effects are removed, the future is indeed black for the tenants. With that heavy incubus removed, it is believed the old time American "fighting spirit" and self reliance will be revived, land will be available on fair terms, and the problem of owner operation and tenancy solved.

The complete tax exemption, or "Homestead" privilege, up to about \$2,000 now being extended in a number of states to owners of properties, will under present conditions ultimately mean a higher price for this class of land, and still further misfortune and hard times for the unfortunate tenant farmers (comprising a large portion of the farm population) who will not share in such a tax exemption privilege.

Farm "Chemurgic" with all its possibilities for bringing about new uses of agricultural products, such as making alcohol out of potatoes for fuel to operate power-driven equipment, likewise will undoubtedly raise the value of rural lands, thus helping temporarily the land owners who "got in early"; along with this it will create work for some additional farm labor.

Finally, under present land conditions, it is certain to have little if any good results as regards welfare of the all but submerged tenants and "sharecroppers," whose rent will be raised in proportion.

Contrary to general understanding, it is a fact that a large part of the serious farm mortgage troubles arose from loans made during the land boom period of the early 20's. (1912 land index price 100; 1920 up to 170; 1933 down to 75; now 83.)

Unless a basic change is made, government lending agencies controlled inferentially by politics and farm land lenders competing with each other for business, will gradually again take part with the speculative element in the driving up of farm land prices to dizzy heights, with another collapse in the offing, far worse and coupled with more suffering and danger than the one we are just emerging from, as on the next occasion, (sure to come under our present system) the patient may not have the potential stored up strength and resources which carried him through the recent crisis.

As a simple way of forestalling speculative excesses, keeping land open to use, free from preemption and restoring again the much to be desired "Great American Frontier," laws should be passed under which an owner of land could exchange his title for a restricted title.

The restriction would be that neither he nor any subsequent owner could sell his property for a sum greater than the cost to replace the improvements upon it. As compensation, he would become exempted from taxation on his improvements. The exchange could be optional.

In a few words, the effect of this would be that a farmer who really wanted to engage in farming would make the exchange to save taxes. If owners of vacant land among such farmers should try to hold for a profit, they would find it difficult to sell at

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Wilmington, Delaware  
**ARTIC**—the preferred Methyl Chloride for Service Work

### Significance of This Article

One of the most significant current movements of the rapidly changing American picture—farm electrification on the grand scale—is one which has received but a scant portion of the attention it deserves from business men and the press.

In this article Mr. Clement, who is director of commercial promotion and research for New Orleans Public Service, Inc., surveys the rural electrification program, draws some highly interesting conclusions, and contributes some original thinking to the philosophy of the movement.

On page 14 of this issue appears an editorial, "Rural Market Expands," wherein the editor points out the opportunity and new market which the rural electrification program is opening up for specialty appliance dealers.

a high price because farmers intending to really make a living would not like to pay a fancy price and immediately throw it away for the exemption advantage.

The proposed plan would, it is the opinion of the speaker, make it possible on an economic basis for the electric companies and others to extend their lines and services in an orderly manner, and while earning a fair return, supply service to millions of additional farms.

The question might be asked, why these tax savings and other economic advantages would be used to promote Farm Electrification. The answer is that Modernization and real efficiency in the operation of the farm would naturally be the first move in a readjustment to meet new and better conditions.

To mention only one of the other economic advantages to the farmer, it can be shown that should he, or members of his family, wish to acquire more land for actual use, this plan makes it available without first paying the usual penalty of going heavily into debt to acquire it.

Now if we conceive of a community of farmers under this plan, we would find that instead of a speculative value developing, something far more useful would develop, namely security for loans for improvements.

If such a system had become established, it is difficult to imagine a safer banking investment than loans for improvements in an active and well settled farming community.

The present system penalizes with ever higher and higher taxation the industrious farmer who takes pride in his work, improves his farm, builds a comfortable home, keeps his barns and equipment painted and presentable.

It rewards with lower taxes, bonuses, etc., the shiftless who here and there provide minimum equipment and em-

ployment, are too lazy to maintain their property, and allow the soil to deteriorate and run down.

It encourages "spotty" development with consequent intervening uncultivated fields, meaning higher community costs for roads, electric power transmission lines, delivery of material, and other services of an essential nature.

It prevents the hoped for development of "Every Farm a Factory" with electrical features, by making it difficult, and in the great majority of cases uneconomic, to bring electric service to the farm. This problem Rural Electrification Administration (R.E.A.) is now wrestling with, and the writer understands, finds it so enormous that even with government assistance the difficulties under our present system make it almost impossible for combined interests to serve at this time more than about 15% of the farms of this country, and notwithstanding the tremendous pressure now being put forth, to go about it much faster than has been done by private interests.

Due to ready accessibility of this well-located land, farmers who work their own lands and those unemployed wishing to "return to the land" even if only on "sustenance" basis, will be in an incomparably better economic position than they can ever hope to be under the present system.

The development of electrification, road building, and other services so necessary to improve the lot of the farmer will proceed naturally, and where land conditions are approximately the same, radiate out from centers where these services are available.

Costs to all concerned will be reduced as the necessity for passing unused farm land with expensive roads, power lines, pipe lines, etc., to reach scattered users will disappear, and a closely built-up, well served farming section takes its place.

The unpleasant effects will only be felt by the land holder who refuses to cooperate and tries to hold more land than he is using and for a speculative rise, or stands in the way by asking an excessive price or rent based on "anticipated" profit. This hoped for, or speculative price is a thing which in its very nature cannot be taxed. It prevents normal and proper land use, and when generally understood, will be looked upon as the bane of our civilization in the past.

It seems a pity that an entirely unreal value, a value which in the aggregate could not possibly be realized, should stand in the way of the primary occupation of mankind and its amelioration by the application of electrical appliances.

The fictitious nature of farm values are astounding, and can be seen by the following illustration:

Let us assume an oasis 8 miles square in a desert, or a square island  
(Concluded on Page 18, Column 1)

## MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

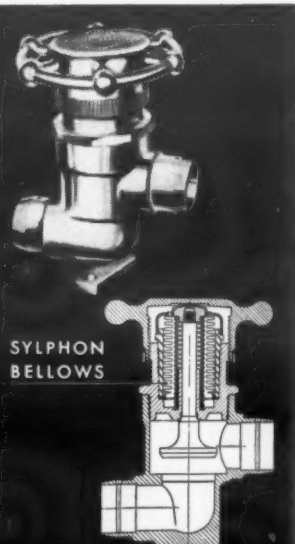
## MUELLER uses SYLPHON BELLOWS

... for Packless Glands

The Mueller Brass Company, recognized pioneers in the manufacture of high quality valves and fittings for mechanical refrigeration, quite logically turned to Fulton Sylphon, the pioneers and originators of the seamless metal bellows, for the finest packless valve gland they could buy.

For this the most highly developed metal diaphragm in the world, is the result of 35 years of research and experience in manufacture and correct application. It has been time-tested beyond doubt in the products of the leaders in the refrigeration industry. Its quality is a known quantity for which you pay no premium. Write for Bulletin FO-121. Sent on request.

FULTON SYLPHON CO.  
KNOXVILLE, TENN., U.S.A.



Sylphon  
SEAMLESS  
METAL BELLOWS AND  
THERMOSTAT ASSEMBLIES

## COPPER TUBING from WOLVERINE



product of  
*Craftsmanship*

WOLVERINE TUBE CO.

1411 CENTRAL AVENUE

DETROIT, MICHIGAN



## THE AIR AGE

### The Future of Tropical Air Conditioning

By F. O. Jordan

An article in "Refrigerating Engineering" entitled "Air Conditioning in Damp Climates" says of air conditioning accomplished by mechanical refrigeration in the tropics:

"A system which so badly interferes with local circumstances never will find general acceptance, though it may offer in principle, the possibility of an inexpensive operation. But no doubt a prospective owner will rather resign on this advantage than go into extensive structural changes of his building."

This conclusion is based upon the following assumptions:

1. That inside conditions of 75° dry bulb and 60% relative humidity are required for comfort.

2. That the required refrigerant temperature when both sensible and latent work are to be performed by mechanical refrigeration, is determined solely by the outside and room dewpoint temperatures.

3. That refrigerant temperatures of 75° are practicable for air cooling only, while refrigerant temperatures of 60° are required when latent work is to be done also.

4. That "the efficiency of the refrigerating cycle which is so unparalleled in cooling jobs, becomes very poor as soon as dehumidification is involved" so that the power required to do a ton of refrigeration is more than doubled if the dehumidification function is to be performed.

5. That the cooling work which must be done in order to effect dehumidification always is mostly wasted.

6. That "the well-known general practice is to seal and to insulate the conditioned rooms in order to enable an efficient recirculation of the air."

That tropical inhabitants will not submit to the closing of windows and doors because the "demand to keep windows and doors closed is entirely opposite to the prevailing habits of living."

#### COMFORT STANDARDS HIGH

Comments upon the above assumptions are:

1. It is well known, and conclusively proven by exhaustive tests conducted by the A.S.H.V.E. research division that much higher inside dry-bulb temperatures and levels than those represented by 75° and 60% result in comfort, especially in hot countries. Therefore, the ratio of latent to sensible load due to outside air, changes from the nine to one ratio claimed in the article and may be more like four or five to one.

2. The refrigerant temperature would be determined solely by outside and inside air conditions as claimed, if no load existed except that due to outside air introduced into the conditioned space. However, loads due to sun effect, transmission, occupancy, appliances, illumination, etc. usually far exceed the outside refrigeration load, and so determine the latent-to-total load ratio.

Hence the proper refrigerant temperature is determined by the latent-to-total load ratio of the total load, not merely of the outside air load.

#### TEMPERATURES IMPRACTICAL

3. Refrigerant temperatures as high as 75° are impractical for many reasons, even though cooling were the only consideration.

Such excessive temperatures so increase the required heat transfer surfaces that their cost becomes excessive, while the large volumes of air required per ton of refrigeration at such high refrigerant temperatures become costly to handle and are impossible to distribute within the conditioned space without unbearable drafts.

Many projects show a room volume of around 1,500 cu. ft. per ton of refrigerating load. At a refrigerant temperature of 75°, the circulation of more than 1,000 c.f.m. is required per ton of direct expansion heat transfer surface refrigerating capacity even at much higher room dry-bulb temperatures than 75°, so that the use of so high a refrigerant temperature would necessitate an air circulation through the conditioned space equal to more than one air-change per minute. About the maximum allowable is five changes per minute.

4. Neither is there the sudden drop in the efficiency claimed nor the tremendous increase in power per ton required when cooling and dehumidifying are compared with cooling only, because the maximum air circulation per ton allowable (considering drafts within the conditioned space) limits practicable refrigerant temperatures to a maximum of 45° to 50°. At these refrigerant temperatures, a good heat transfer surface will develop a latent-to-total capacity ratio of 25% to 40%, depending upon the character and arrangement of the surfaces, the air velocity through them, and the proportion and moisture level of outside air introduced.

Since the latent-to-total load ratios of the majority of air-conditioning projects fall within this range, the required amount of dehumidification generally is accomplished without the necessity of utilizing lower refrigerant temperatures than would be practicable even if dehumidification were omitted.

Upon certain projects of excessive latent loads, somewhat lower refrigerant temperatures are made necessary, but the resultant decrease in efficiency and rise in power per ton are not great.

5. From the foregoing, it may be seen that the latent-to-total capacity ratios developed by refrigerant temperatures as limited by several practical considerations, are within the latent-to-total load ratios usual for the majority of projects, so that generally little or none of the cooling is wasted which is done in accomplishing the required latent work.

Generally this is true even in moist climates, because so many other loads are involved in summing the entire load that the effect of a small proportion of outside air is largely overruled.

6. To date we never have heard of an air-conditioned room being "sealed" because it was air-conditioned, and where such rooms are insulated it is to reduce sensible heat gain rather than infiltration of outdoor moisture.

#### UNWARRANTED FEARS

As to the tropical demand for keeping open the windows and doors, this reminds us of the similar trouble predicted here a few years ago when air conditioning first became a topic of discussion, but which never developed because folks the world over not only learn, but even insist upon shutting out the heat as soon as they experience the comforts of air conditioning within the closed room.

If there is any difference in the air requirements and window opening propensities of the natives of St. Louis and the denizens of the equatorial regions, science has not discovered it to date.

For these reasons it would seem to be yet premature for air-condition-

ing manufacturers to cancel such good equatorial distributorships as they may be so fortunate as to possess.

### What Training Is Needed For Air Conditioning?

366 East 155 St.  
Bronx, N. Y.

Editor:

Your article on "The Air Age" was very interesting. I am sure that you will receive quite a response for a continuation of this column.

"Open discussion" is an excellent idea, for it should bring forth many problems of interest from the experienced men who are now actively engaged in air conditioning.

There are, I believe, a considerable number of men who would like to enter this new field, but who are perplexed as to just what course to pursue to enable them to become efficient and fill the requirements of the employers associated with this latest industry. With this thought in mind, I have submitted two questions which should prove of interest to readers of your latest column.

1. What class of a background should men possess before entering this new field, mechanical, technical or both?

2. Can you outline a practical form of training that will fill the necessary qualifications of the "air-conditioning field?"

Your articles on "Air Conditioning Made Easy" are very clear and written so that the average layman or student can grasp the thought you wish to convey. I am sure that when the book is printed it will have a greater circulation than you now anticipate.

Thanking you for your efforts in bringing to light the educational side

of the "air-conditioning" industry, and wishing you every success in your undertaking.

HARRY A. TURNER

Answer: As to the necessity of a mechanical or technical background for the man who wishes to enter the air-conditioning field, the former certainly is of decided assistance, especially if the aspirant has in mind a service or installation mechanics job, while the latter is almost indispensable for the man who wishes to become an expert air-conditioning engineer.

Certainly the man who has neither background should consider all angles seriously before attempting an entry into the air-conditioning field, unless perhaps he intends to confine himself strictly to sales.

A complete discussion as to practical courses of training cannot be given in our allotted space because of the many types of positions and aspirant backgrounds involved.

Any judiciously selected university course, if you have the time and money, or correspondence course, if you have the tenacity to study by yourself, is advisable, especially if combined with a part time, summer time or full time job with some concern in the air-conditioning business. Trade schools in which theory and practice are properly combined is another approved approach.

Any one desiring more complete information on this subject, especially if interested in personal educational service suited to the individual background, may receive some by writing this column.

See "The Bottle-neck" paragraph of "The Air Age" in the Feb. 17 issue of AIR CONDITIONING AND REFRIGERATION NEWS.

Additional comments and questions upon this important subject will be welcomed from anyone interested.

### Outdoor Air Conditioning In California

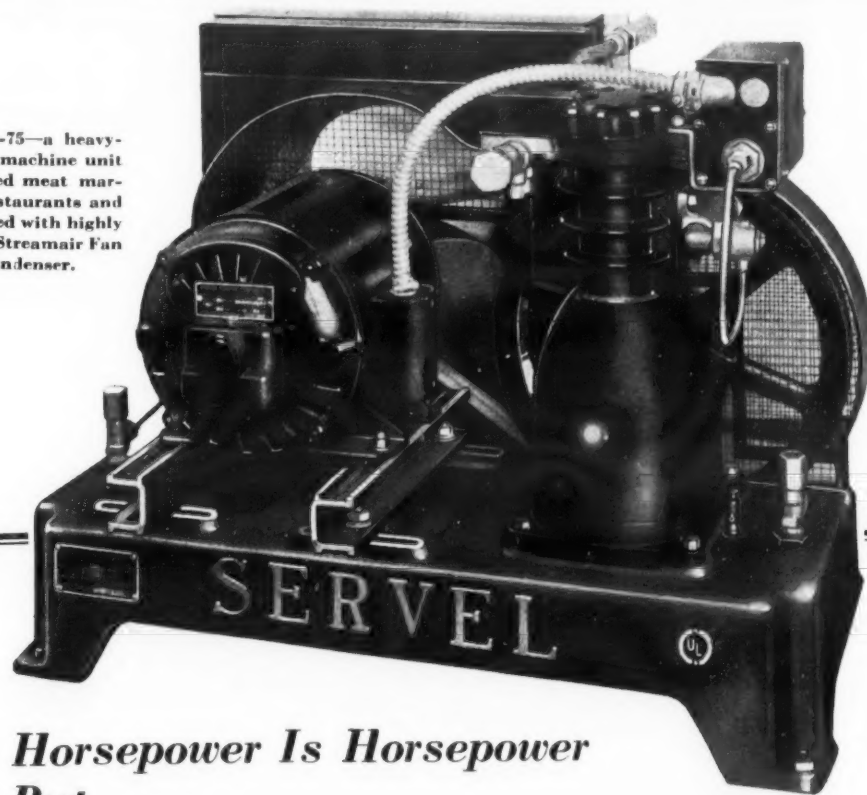
"And it is free," proclaims a native son in the accepted California manner.

Fortunate natives of the western coast are not known for their modesty regarding the renowned climate of their sunny shores. Continuing along the same line of thought, a loyal San Franciscan now urges that the Chamber of Commerce utilize the modern trend of public thought toward air conditioning to focus the Klieg lights of a less favored world upon the lure of his local Eden by blazoning upon the sales promotional skies the announcement that, "San Francisco is Air-Conditioned."

What this particular son has to sell is of no moment here, as doubtless he will sell plenty of it during the world-wide California-here-I-come rush which must follow closely upon the heels of the emblazoning that he advocates, that is, if we can judge by the experience and fortunes of astute business institutions which utilize the lure of air conditioning within their portals, especially if their competitors have nothing of like nature.

On this basis, all of Sunny Cal's sister states will be forced to install statewide air conditioning if they want to stay in business, and from what we can hear (never having been much closer than Chicago) there exist some spots even in California where they never would begrudge a few B.t.u.'s surreptitiously removed by air conditioning (page Death Valley).

Servel Model D-75—a heavy-duty air-cooled machine unit for medium-sized meat markets, dairies, restaurants and taverns. Equipped with highly efficient Servel Streamair Fan and shrouded condenser.



Horsepower Is Horsepower  
But . . .

## IT'S CAPACITY THAT COUNTS!

Horsepower won't cool a refrigerator . . . it takes refrigerating capacity to do that job!

Servel refrigerating machines have been known, for many years, as "high capacity" units . . . strong, powerful machines that afford increased I. M. E. per KWH through a combination of engineering advancements unmatched in any other line.

The dealer who selects his equipment carefully enjoys a marked advantage. He can offer his customers machine units that are amply "big" for their capacity requirements, without burdening them with needless expense for excess "horsepower."

Write today for complete information. Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana.

# SERVEL

COMMERCIAL REFRIGERATION  
AND AIR CONDITIONING

### Year 'Round Dualaire Conditioning

## DUALAIRE

BEAUTIFUL ROOM UNITS

DO IT ALL!!

HEAT — COOL — FILTER

Humidify — Dehumidify — Circulate

Distributor Franchises Available

We Invite Your Inquiry

DUALAIRE, Inc., South Bend, Ind.



## Farm Community Developments Seen As Solution to Electrification Problem

(Concluded from Page 16, Column 5) in the ocean to be divided into 64 equal squares like a checkerboard.

Let us say that each square, one square mile, is owned by a different absentee owner. Let us suppose that there is only one man willing to locate there and that he has only \$1,000 plus certain necessary personal effects, and that he wants a square mile of land. He approaches each one of the 64 owners, and each wants \$1,200, but the prospective purchaser has only \$1,000.

The effect of his offer will be that each owner will think his land could have been sold for \$1,000, and valued as we are accustomed to value rural land, the oasis or island would be deemed worth \$64,000.

This may seem an absurd illustration, but upon reflection it will be clear to anyone that there are many more useable tracts of land in this country than there are potential users.

There are many who think that taxation is a remedy for this situation, but the weakness of this idea can be seen if we consider what happens when we try to tax these fictitious values. The assessor levies taxes based on the value at which land is being held. Immediately it is discovered that the land is not producing anything.

The tax commissioner doesn't see any way to collect. He says, "you cannot get blood out of a stone." He knows he cannot sell out all the owners, but even if he could stem the tide of indignation, who would buy? What happens as the result of this? The tax rate is reduced to almost nothing and the land is held out of use indefinitely in hope of a profit which in the aggregate is impossible to realize.

As an interesting sidelight I quote a few hitherto somewhat overlooked lines from the writings of Abraham Lincoln:

"An individual, or company, or enterprise, acquiring land should hold no more than is required for their home and sustenance, and never more than they have in actual use in the prudent management of their legitimate business, and this much should not be permitted when it creates an exclusive monopoly. All that is not so used should be held for the free use of every family to make homesteads and to hold them as long as they are so occupied."

By farming communities we mean aggregations of farmers who make their living upon their farms and whose farms are close enough together so that they can easily trade with each other.

An isolated farmer has either to produce and make everything he needs, or trade with the city on whatever terms he can get, whereas when a number of farmers are neighbors, each can confine himself to those products to which his farm and his experience are best adapted, knowing that he can get from his neighbors by a fair exchange those things which they are better qualified to produce than he is.

Agriculture is the only occupation by which men can produce the primary necessities of life—food and wearing apparel, and it might be pointed out that farming communities have been in all ages the primary attributes of civilization.

With these necessities assured, he has a stable economic base that no industrial upset can destroy. The

industrial worker is dependent at all times on his ability to sell his labor in order to eat and produce wearing apparel. Good examples of a stable and unstable base of operations.

The very stability of the agricultural worker under this plan, however, would guarantee the stability of the industrial worker. The economic welfare of the two, therefore, develops the much desired "satisfied relation."

When men can employ themselves in the primary occupation their need for all kinds of appliances and conveniences, as well as their desire for luxuries, determines the erection of factories.

With the incubus of speculatively-held land destroyed, men knowing that they could employ themselves would ask higher wages for working in factories. This would determine the use of labor-saving devices of all kinds.

In this way the destruction of speculation in agricultural land would usher in the greatest industrial age the world has ever seen.

The plan advocated here, when put into effect, would mean an immensely improved status as regards the 73% of these rural people located mostly on about six million farms, who are now condemned to carrying water from wells; the 77% who get along with outdoor toilets, and the 93% who have neither bath-rooms nor showers. It is said that 73% depend upon kerosene or gasoline lamps, and 48% have to do laundry work out of doors. A truly shameful picture when we consider that an optional tax adjustment feature making difficult or almost impossible the present dog-in-the-manger policy of speculatively holding land out of use can change all of this to a situation where human beings can have not only electric and other needed service in abundance, with a fair return to the suppliers, but would be in a position to avail themselves of many of the other conveniences and comforts mentioned above and now so common to their city cousins.

With the bringing up of the purchasing power of our farming sections, and the supplying of these wants, together with the reestablishment of our "Great American Frontier" as a haven and easily realized means of economic independence for many hundreds of thousands of unemployed, there will be ushered in a continuous trend of prosperity, with ever rising and increasing wealth—a truly "satisfied relation" of the atomic structure of society.

In closing I might refer to the model "Electrified Farms" which have recently been established in several states by interested power companies and at some points by governmental agencies.

As will be readily seen, much of the benefit of electrical equipment is lost if a farm equipped in the most ideal manner with electrical appliances of all kinds is surrounded by land more or less unused and which is certain to go up in price thereby obstructing the arrival of neighbors.

While helpful, none of these experimental demonstrations can be of any very practical value in solving our great farm electrification problem or the problem in general, until these are first extended to integrated and electrically served Farming Communities in various selected and more favorable sections of each state.

Farming communities as I have said

are the natural and first result of civilization and were there no obstruction, they would appear as a matter of course. Moreover the social life in such communities would tend to be better than in the cities. The nature of this obstruction is so simple that its very simplicity keeps us from noticing it. The following illustration will help to make clear what I mean:

Let us suppose that a man buys land at \$25 an acre. Let us suppose that in some way he induces a power company to serve it with electric current. Let us suppose he then equips it with the very best of electric appliances.

Suppose a visitor comes and says, "I like the way you live. I like the country. I think I will see if I can buy a farm around here and we can be neighbors." He tries, but finds that owners of surrounding land, seeing the success of our pioneer, want \$50 an acre. Suppose he buys at \$50 and makes a self-sustaining home.

Suppose another comes and sees the success of these two and tries to locate there. He is likely to have to pay \$75 an acre. The next will have to pay more, and this obstructing wall of land prices will absolutely stop the natural growth of a farming community long before it reaches a stage where the social life and natural co-operation will make country life really attractive, and where electrical service can be rendered with profit to both distributor and consumer.

The desired result, I think, can only be achieved with the cooperation and constructive help of the governing authorities, and along with it, to be successful from the all important economic standpoint, there must be put into effect the benefits of the aforementioned optional tax exchange plan, or some similar adjustment, designed to cure our present admittedly unfair and explosive farm land situation.

As an evidence of how the great industrial leaders and business men feel with regard to such fundamental research, and as a sign of the times, one has only to refer to a recent address "Industry's Responsibilities Broadened," by Alfred P. Sloan of General Motors Co., wherein Mr. Sloan says:

"We must challenge industry's thinking, its standards, and its methods, in terms of the broader demands of today and tomorrow. We must recognize the importance of the instrumentality of economic research as a source of greater knowledge, just as we have successfully studied and capitalized the secrets of nature through the instrumentality of scientific research." And in a later passage, "We must do all this courageously. Our resources, both of time and in substance, must be drawn upon for this purpose. This has now become our plain duty—a responsibility we can no longer dodge. In no other way can the economic facts with respect to industry's progress and their influence on human progress be presented to the forum of public opinion."

It seems reasonable to believe that with so much at stake, our great industrial and manufacturing organizations, after considering the far-reaching implications of this entire proposal, might be willing to join hands in this suggested approach to the problem.

Here indeed it will be found is the way—fundamental and significant as the force of gravitation (or that of electric attraction and repulsion), by which we may create much needed opportunity for restless young people, comfortable sustenance, work for our great army of unemployed, and "Social Security" for all.

## 100 Americans to Study European Research

NEW YORK CITY—Research laboratories of 18 major fields of industry, including food preservation, in England, France, and Germany will be visited this summer by about 100 prominent American bankers and industrialists who are expected to participate in a tour of foreign scientific laboratories which is being arranged by the National Research Council's division of engineering and industrial research.

Leaders in America's food industry will be especially interested in a visit to the National Physical Laboratory of England where extensive food research has been conducted, including numerous experiments with frozen foods. A visit will be made also to the Research Association Laboratories of British Rubber Manufacturers, where investigations of storage and packing of foods and beverages is being made.

The trip also includes visits to the Institute Pasteur in France, and to the Brewery Research Laboratory in Germany. In addition, visits will be made to numerous research laboratories sponsored by governments, trade associations, or universities. Special side trips to other industrial laboratories may be arranged by request. Foreign hosts will include such organizations as the Department of Scientific and Industrial Research in England, the Verein Deutscher Ingenieure in Germany, and France's Sorbonne.

This foreign tour has been preceded by three educational industrial trips conducted in this country in 1930, 1931, and 1935, under the auspices of the National Research Council. Maurice Holland, director of the Council's division of engineering and industrial research and leader of the three previous expeditions, will head the foreign tour.

## Kelvinator Issues New Commercial Promotion

DETROIT—A promotion piece based on the Kelvinator line of standard commercial refrigeration, liquid cooling, commercial and residential air conditioning, and automatic heating equipment has been prepared by Kelvinator Division, Nash-Kelvinator Corp., for use by factory representatives in encouraging dealers to take up the Kelvinator franchise in these fields of temperature control.

Profusely illustrated and bound in loose-leaf form with a stiff cover, the new piece of dealer persuasion describes the various lines of Kelvinator temperature control equipment, explains the market and consequent value of the franchise for each line, tells of the advertising placed behind each product, describes the various sales methods and aids developed by the Kelvinator organization, and gives a general background of the company's history and reputation.

## Tecumseh Designs New 2-Cylinder Compressor

TECUMSEH, Mich.—Just introduced by the Tecumseh Products Co. here is a new V-type 4-cylinder compressor, featuring compact design, interchangeability of parts with single and twin-cylinder models, and elimination of compressor rings by reason of its one-piece crankcase construction.

Other design features of the new Tecumseh unit are the adjustable suction valve clearance, which may be set to various inlet positions by changing the position of the gas distributing chamber cover plate, and the 90° eccentric drive which is said to eliminate practically all noise and vibration.

According to F. K. Smith, sales manager, refrigeration division, the new design reduces friction so that thermal efficiency shows an improvement over the other models.

The unit is particularly suited to use in self-contained air-conditioning unit service because of its quiet operating characteristics and its compact design, claims Mr. Smith.

The compressor is designed for use in ½-hp. to 1-hp. applications.

## Air Conditioning in Chicago Educational Field Begun

(Concluded from Page 1, Column 2) to be installed in the new administration building at the University of Chicago, and in De Paul university's downtown school.

The month's contracts were divided as follows:

General offices .....	8
Theaters .....	6
Shoe stores .....	5
Restaurants .....	4
University buildings .....	2
Industrial plants .....	2
Dentist's offices .....	2
Hotels (partial) .....	1
Fur stores .....	1
Residences .....	1
Private offices .....	1

## WANTED

MEN BETWEEN 25 AND 45 YEARS WHO CAN SELL TO THE GROCERY AND MEAT TRADE

America's most successful manufacturer of equipment for grocers and butchers is enlarging his selling area. A limited number of profitable dealerships now open to men of character and experience. Support from extensive national advertising campaign. Drawing account considered for sincere, desirable applicants. Our representatives earn between \$35 and \$200 weekly! Write fully, experience, age, references, pen and ink in your own handwriting. Your reply kept confidential. Nothing to buy, no obligation.

Box 909, Air Conditioning and Refrigeration News, Detroit, Mich.

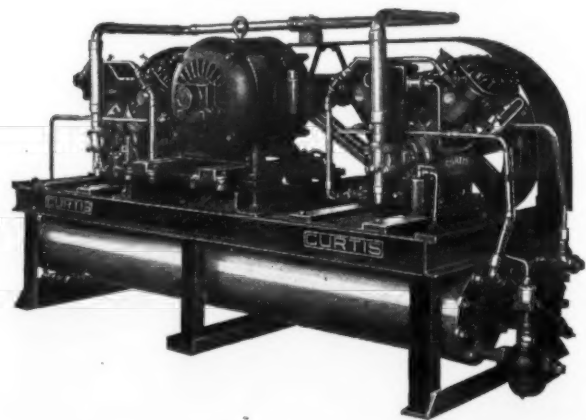
## What 83 YEARS OF EXPERIENCE Means

IT MEANS first of all that the Curtis organization has accumulated the benefits of successful manufacturing and engineering

experience since 1854. It means that today Curtis designs and construction details reflect that fine engineering technique that only experience can produce. And the result is the care-free, efficient performance of each Curtis condensing unit.

It means too that the Curtis merchandising policy is time proved. Curtis does not sell direct nor through any outlet other than its recognized representatives. With such a product and policy Curtis dealers everywhere are making money. Write today for further information.

Represented in Canada by  
CANADIAN CURTIS REFRIGERATION CO., Ltd.  
20 George St., Hamilton, Ont.



# CURTIS

CURTIS REFRIGERATING MACHINE CO.  
Division of Curtis Manufacturing Co.  
1912 KIENLEN AVE. ST. LOUIS, U. S. A.

HILL ALL PORCELAIN  
Reach-In  
REFRIGERATORS

Send for this  
NEW 32 PAGE  
CATALOG

HILL  
REFRIGERATORS  
ARE EASIER TO SELL

THE new Hill line of improved Reach-in Refrigerators for restaurants, hotels, institutions, hospitals and bakeries is easier to sell because better made—and noticeably so. The low conductivity corkboard insulation is thicker, the interior and exterior are genuine porcelain, the hardware is of special design, the coils are more easily reached, the proportions are more graceful, and the refrigeration is better.

Send for 32-page illustrated catalog, describing outstanding HILL features and listing complete specifications.

Hill Products Division

C. V. HILL & CO., Inc., TRENTON, N. J.



## Some Quota Busters Meet a Top Wrangler



P. Y. Danley (second from left), manager of the Westinghouse refrigeration department, gets a kick out of his introduction to a group of "Quota Busters" (leading retail salesmen) during their recent convention.

## - PROFITABLE SALES METHODS -

### Small-Town Salesman Puhl Finds Personal Contacts Great Selling Aid; Caution on Trade-ins Profitable for Droutz

By T. T. Quinn

Reported on this page are more interviews with star Westinghouse salesmen, obtained at the recent "Quota Busters" convention.

Sales of 131 Westinghouse refrigerators in a hamlet of 200 people sounds like a phenomenal achievement, but it's the mark that Wilson D. Puhl of Sanatoga Radio Co., Sanatoga, Pa., hung up during 1936 in this village and the surrounding towns of Boyertown, Royersford, and Spring City.

For benefit of the geographically inclined, Sanatoga is between Pottstown and Philadelphia, about two and a half miles east of one and 38 miles west of the other.

Three salesmen work out of the dealership, which is headed by Oliver Wittenmyer, a man widely known in the appliance field in that territory. Operations are conducted out of a showroom, 24x26 feet, which Mr. Wittenmyer has constructed in front of his home.

So well known is he, says Mr. Puhl, that prospects from miles around will

drive into Sanatoga and see what he's showing, and a lot of prospects are picked up that way. Fully 60% of his own sales, however, have been made out in the field, Mr. Puhl states.

In addition to the fine record with the Westinghouse line, the dealership also sold 83 Grunow units last year, and 38 Westinghouse electric ranges.

Canvassing in the territory is hardly necessary, Mr. Puhl declares. Towns are so small that almost everybody knows everybody else, so his best source of leads is tips from users and friends.

Personally, Mr. Puhl prefers to work in Boyertown. Residents are Pennsylvania Dutch, of the conservative type—and when they want anything they've the cash to pay for it, he says. Residents of the other towns are more willing to take chances, buy on time—but while sales there might be a mite easier, the cold cash looks best to this salesman.

Boyertown people turn in plenty of good leads for the appliance or cash bonus Mr. Puhl offers them—they love to earn things that way. But

perhaps they don't always get off as easily as they think. When they choose an appliance, Mr. Puhl has them come to the Sanatoga Radio showroom to look things over—and then goes to work on them for a larger appliance, on which the cash value of the smaller appliance may be applied.

Most of the dealership's advertising, Mr. Puhl says, is of the newspaper type, with some billboard advertising included during the spring and early summer months. Direct mail has been tried, but hasn't produced, he states.

Sales during the past year have run to larger units, mostly around the 7-cu. ft. size, Mr. Puhl finds. Only two of last year's sales were 4-cu. ft. jobs, and 67 units sold were of the deluxe type.

Used electric refrigerators? No trouble at all, says Mr. Puhl. His store will trade for—and sell—at least 30 used units this year. They will recondition them, and sell them for from \$50 to \$100 to people who say that they can't afford to purchase new models. Usually there's no guarantee at all on the used units.

Of course, if the customer decides later that he'd rather own a new refrigerator, the store will allow him full price on the used job. And trade-in sales of this type often make several new model sales, Mr. Puhl declares. Last year, he says, one used refrigerator sold three new ones.

Going back to the 38 electric range sales, Mr. Puhl attributes them largely to the fine cooperation of the two utility companies in his territory—Philadelphia Electric Co., and Metropolitan Edison Co.

Philadelphia Electric's rental range proposition has been a help. Terms to customers are as low as \$10 down, with charges of from \$1 to \$2 per month for a year, at the end of which time the customer can buy the range, and have all his payments counted in the purchase price. Metro—the exception that it charges the politan Edison's plan is similar, with customer \$15 for installing the range, while Philadelphia Electric does the job and wiring gratis.

Mr. Puhl, an interesting example of how good men get into the electrical appliance business, was at one time a structural draftsman with Bethlehem Steel Co. Radio was his hobby, and he worked on it during his spare hours.

Came the crash, and his Bethlehem Steel job evaporated, so he went to work for Mr. Wittenmyer selling radios. From there, it was an easy step into refrigeration. Now, Mr. Puhl wouldn't trade jobs for anything. But who would, with that sales record?

### Droutz Advises Courage to Say 'No' on Bad Deals

In a territory of 14,000 people, R. C. Droutz of Bushyager & Droutz, Jeannette, Pa., sold 220 Westinghouse refrigerators last year . . . principally, he says, because he had the courage to say "no."

Mr. Droutz is a "lone wolf," as far as selling for the company goes—but not for his own wishes. He'd gladly hire salesmen, if he could get some good ones; in fact, he's offered up to 15% for men who can produce. But he can find no takers.

Selling in Jeannette, says Mr. Droutz, is strictly a "use the user" proposition. He does no house-to-house canvassing, relying for leads on tips from users and friends. A bonus system, by which people who turn in names of eventual buyers are given cash or small merchandise for their efforts, has proved a big help.

Considerable refrigeration business is being done on a trade-in basis, and that's where Mr. Droutz employs his "no" theories with good results.

"In trading for a used electric refrigerator," he says, "give for it about what you think it will bring you in a resale, repairs taken into consideration. Then you'll not go wrong."

"Don't be too anxious to make a sale—have enough nerve to say 'no'—and mean it. It may take a little courage to say it the first time, but you'll find the results not nearly as fatal as you think."

"Nine times out of 10, the prospect will buy—if he's been well sold. If he hasn't, the chances are that he'll find some excuse to slip out anyway, so the trade-in will be as good an 'out' as any."

"The reason most dealers are in business is to make a profit—I know

that's why we're there. If we can't, we won't stay in. We have to make a profit on every transaction, and we certainly can't afford to have a lot of cash tied up in trade-in refrigerators that were taken in at prices higher than their worth. For the same reason, we can't afford to sell trade-in refrigerators at a loss."

"We offer a fair price—and if a competitor can beat it, he can have the deal. But you'd be surprised how few sales you lose when you've really taken the trouble to sell the prospect on your own make of refrigerator. Trade-in isn't everything—and most prospects are willing to take a little 'loss' on their old refrigerators, if you've convinced them that the refrigerator you sell is the best one they can buy."

Encouraged by Mr. Baker's record at Uniontown, Mr. Droutz is planning to go out after unit kitchen business. It's the ideal setup at present, he

thinks. Housewives are interested in the all-electric kitchen now, and with many old kitchens going to disuse, the time is ripe for wholesale revision.

He's thinking of installing a model kitchen in his own home, and use it as a showroom for prospects. From investigations in his territory, he finds a minimum of sales resistance to the kitchen idea—and he's thinking that, in addition to the refrigerator business, added sales of ranges and dishwashers should fit nicely into the profit column.

Besides, Mr. Droutz is in the electrical contracting business, and could handle the job from beginning to end.

"Most parties end in the kitchen, anyway," he declares. "It's getting to be almost as important a social center as the living room. So why not make it as attractive as possible—so that the host can well be proud of taking his guests out there for the windup?"



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The four essentials of any refrigeration controlling device are fully met in TAG's Snapon Control Type R-7 shown here. The construction is the simplest of any on the market. The current carrying and movable parts are rugged and have the Underwriter's approval up to and including 1½ HP motor, so that the R-7 will frequently outlive the units it serves. Its accuracy has been proven in many breakdown tests by the nationally known manufacturers who use it. And, in appearance it bespeaks its solid utility and faultless operation. Send for a copy of the new TAG Catalog No. 1136-25.

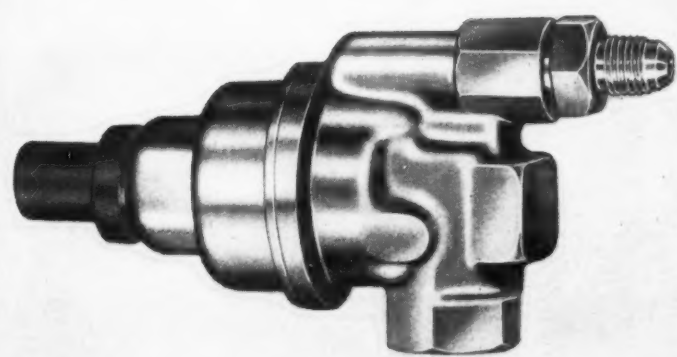
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C. J. TAGLIABUE MFG. CO. Park & Nostrand Ave's., Brooklyn, N. Y.

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WEST NORFOLK, VIRGINIA



## HOW TO SELECT AND INSTALL AIR-CONDITIONING SYSTEMS

By T. H. Mabley, Chief Engineer,  
Mechanical Heat & Cold, Inc., Detroit

### Case No. 8

## A Doctor's Suite

Application of a single, standard-type air conditioner in a doctor's office will be considered in this instalment.

The office suite consists of a reception room, three private offices, and a wash room. These are all located on the top floor of a two-story commercial building. The space on both sides and below the area to be conditioned is normally occupied by other tenants, and is at a temperature

probably no higher, and possibly even lower, than the outdoor air.

In studying the desired features of the proposed air-conditioning system, we conclude first that for winter the most important functions are humidification and ventilation.

The purchaser, being a medical man, is well acquainted with the importance of humidification to keep the mucous membrane free from the usual dryness that so often leaves people more susceptible to colds and other related diseases in the wintertime.

Furthermore, in introducing an ample quantity of fresh air con-

stantly, or at least at frequent intervals, the usual odors that can become objectionable in a doctor's treatment room may be reduced. The air that is brought in from outdoors as well as the recirculated air must be filtered.

Since the heating system is adequate it is necessary only to provide heating for the fresh air handled by the equipment. In other words, if the mixture of fresh and recirculated air, as it goes through the unit, is so tempered that it is discharged at a temperature approximately 70°, it will not interfere with or tax the existing arrangement for heating each room, which in this case is a radiator in each section of the conditioned space.

A little more heating load will be added to the present steam supply, as it is expected that with this system more fresh air will enter the space and be heated to room temperature than might normally leak in by infiltration.

For summer use cooling and dehumidification must be accomplished, as well as filtering and circulation. Equipment will be selected to give the anticipated average proportion of dehumidification to sensible cooling, and if there is any variation from design conditions, as there will be a good part of the time, we may expect a slightly lower or higher humidity in the conditioned space than the figure used for design intends.

For the purposes of our equipment we can establish the following design conditions:

Outdoors—maximum, 93° dry bulb and 75° wet bulb; minimum, 10° dry bulb and —10° wet bulb.

Indoors—summer condition, 80° dry bulb, 50% relative humidity; winter condition, 72° dry bulb, 30% relative humidity.

Fresh air—normal infiltration 200 c.f.m.; desired quantity —30 c.f.m. per person. Total 300 c.f.m.

With these conditions as a basis we can proceed to calculate the cooling load in detail, and from that select the equipment. The heating load is a simple computation: 300 c.f.m. x 1.03 x 82° rise, which is equal to 25,338 B.t.u. An additional allowance should be made for the heat requirements for humidification: 300 c.f.m. x .64 x 35 grains, or 6720 B.t.u., making a total of 32,058 B.t.u.

A study of the heat gain calculations shows that more than one half of the total sensible load is represented by conduction of heat through the ceiling. It was estimated that the sun rays striking directly on the flat roof of the office space raise the temperature in the space between the roof and the hung ceiling about 30° above the outside conditions.

The tremendous heat gain through the plaster ceiling could be reduced by two methods: first, by ventilation of this shallow attic space; and second, by insulation of the ceiling area.

Ventilation could be accomplished either by installing louvers in the walls and perhaps natural draft wind turbine type ventilators on the roof, or by the use of an exhaust fan installed in a penthouse on the roof. The latter method is of course the more positive of the two, but is a bit more costly.

A good insulation job is preferred to either of these for at least two main reasons: (1) there is no up-keep or cost for fan operation; (2)

## Heat Gain Calculations

Conduction:	B.t.u.'s
Front Windows—45 sq. ft. x 180 B.t.u.	8,100
Rear Windows—30 sq. ft. x 1.13 x 13°	441
Front Wall—(250—45) sq. ft. x .46 x (13°+10°)	2,169
Rear Wall—(250—30) sq. ft. x .46 x 13°	1,316
Partition—1,000 sq. ft. x .30 x 11°	3,300
Ceiling—1,250 sq. ft. x .69 x (13°+30°)	37,088
Floor—1,250 sq. ft. x .25 x 11°	3,438
Fresh Air:	
300 c.f.m. x 1.03 x 13°	4,017
Lights:	
500 watts x 3.4 B.t.u.	1,700
Appliances:	
One sterilizer 600 watts x 1/2 x 3.4 B.t.u.	1,020
Occupancy:	
10 people x 220 B.t.u.	2,200
<b>Total Sensible Heat</b>	<b>64,789</b>
<b>LATENT HEAT</b>	
Fresh Air:	
300 c.f.m. x .64 x (104—76) grains	5,376
Appliances:	
One sterilizer 600 watts x 1/2 x 3.4 B.t.u.	1,020
Occupancy:	
10 people x 180 B.t.u.	1,800
<b>Total Latent Heat</b>	<b>8,196</b>
<b>Total Heat Gain</b>	<b>72,985</b>
<b>Ratio Sensible Heat/Total Heat—.887.</b>	

it has considerable value in wintertime to reduce the heat loss through the ceiling and thus cut the cost for heating.

A 4-inch thickness of a good grade insulation on the roof will cut the conduction factor of the ceiling to approximately one tenth of the original factor and thus give us a saving of 33,379 B.t.u.

Another saving could be made if awnings were used on the south windows. This would amount to about 80% reduction or 6,480 B.t.u. We therefore have a net total cooling load, if these two saving features are employed, of 33,126 with a ratio of .750.

An air-conditioning unit which has a cooling capacity of about 3 tons and with the direct expansion coil designed to give the desired performance with a ratio of 75% sensible cooling with the balance dehumidification or latent cooling effect, will handle the job.

This unit must be equipped with a heating coil that will have a capacity equivalent to approximately 140 sq. ft. of steam radiation to temper the air as it passes through the conditioner.

A unit to give the required performance will handle about 1,500 c.f.m., which means that the fresh air will represent about one fifth of the total air entering the conditioner. This gives us an inlet temperature during the summer of a little less than 83°, and during the winter of approximately 66° F.

After making a study of the physical details of the space it is decided to hang the air-conditioner unit from the ceiling of the washroom and build a false ceiling around the unit. This arrangement will give a plenum space from which the recirculated air can be drawn. The recirculated air grille will be installed in the hallway wall at the ceiling, and will be mounted with a hinge so that it will also serve the purpose of an access door to the plenum space for adjustment and service of the unit.

The hall ceiling will be dropped somewhat to conceal the supply ducts leading to the grilles in the two offices and the reception room. These grilles will be mounted in the room partition at the ceiling and should be of the diffusing type to prevent any objectionable drafts.

Wood louvers will be installed in the lower panels of the office doors to assure a proper return of air into the hallway and thence into the return air grille. For fresh air a hole is cut through to the roof and a duct will be installed to bring fresh air down from a weathertight intake fitting on the roof to the conditioner below. Both the recirculated-air opening to the plenum space and the fresh air duct should be equipped with dampers which will be thermostatically controlled by means of a thermostat located in the fresh air intake. This control may be set so that at any temperature between 70° and 80° the recirculated air damper will close and the fresh air damper will open wide.

At temperatures above and below this range the fresh air will be partially shut off and the recirculation damper opened proportionately. At any temperature above 85° or below 60° the fresh air dampers will be closed to a predetermined setting which will enable the system to bring in 300 c.f.m. from the outside.

A manual control will be provided where it may readily be adjusted for such occasions requiring an increase of this minimum ventilating setting.

The damper motor should be equipped with an auxiliary mechanism which causes the fresh air damper to close completely when the fan stops, thus preventing the danger of freezing the coils in the wintertime and reducing the excessive loss of heat through the system during shutdown periods.

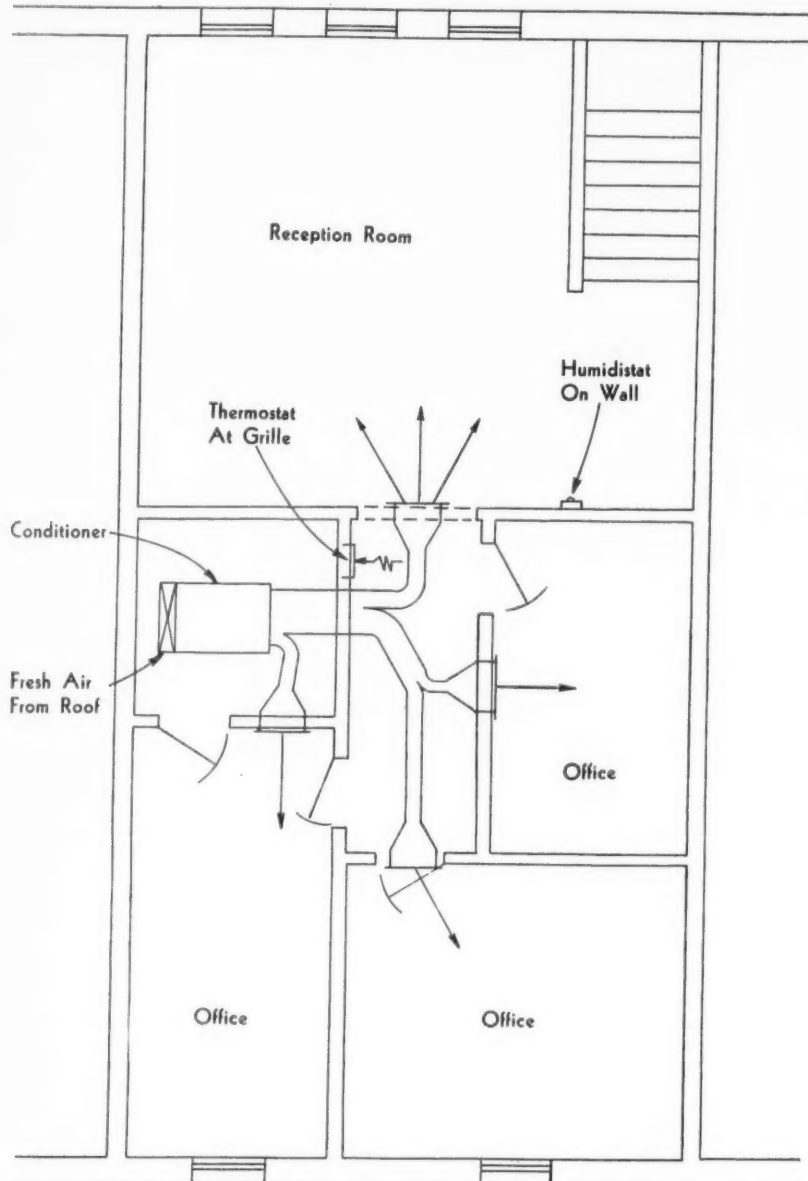
The other controls will consist of a discharge temperature thermostat to control the steam valve for the tempering coil. This should be located in the outlet of the conditioner. Another thermostat to control the cooling equipment should be mounted on the return air grille where it will get the most accurate indication of the average temperature in the conditioned space.

The refrigerating machine can be installed in the basement of the building, and a thermostat operating the automatic starter switch installed at the compressor location.

A humidistat should be mounted on the wall in the reception room. This may be connected to turn the conditioner on and off automatically during the winter season as well as control the humidification function of the unit.

A manual control switch should be provided to operate the conditioner continuously during the summer or at any other desired time. While this may appear a rather complicated control system for such a simple installation, it will be observed that each item has a particular purpose and contributes in a very definite way to give the most satisfactory kind of performance from the standpoints of comfort and of economy.

### Layout of Professional Office Installation



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## — WHAT DEALERS ARE SAYING & DOING —

### Arenson Reports Peaceful, Profitable Situation in Canton, Ohio; Salem Dealer Complains of Price Cutting

By Rossiter Huntington Potter

E. L. Arenson is store manager at the Ideal Furniture Co., North Market St., Canton. There was a Westinghouse display on the right, balancing the furniture setup on the left.

"Furniture dealers are realizing more and more that refrigeration is extra profit," Mr. Arenson said. "Originally it was a doubtful experiment with us. From that it became a necessary evil, we thought—people had gotten used to the idea of a complete setup in one store."

"And still the furniture dealers didn't see the opening waiting for 'em. They kept up refrigeration because people seemed to expect it," he acknowledged. "As far as we were concerned it was still small potatoes. But it's not any more," he followed up quickly. "Refrigeration isn't the baby of the family these days. It's way up, and most furniture men are making the most of it."

Six men are always on the floor, the store manager outlined his setup. They receive straight salary plus "pm's" on certain smaller appliances so that the complete line won't be neglected.

Mr. Arenson doesn't believe in cold canvassing. "They come in just as often without it," he affirmed, "and you're much more apt to have satisfied customers. They have a definite idea what they want, usually, and come in because they expect to find it here. It's not hard to help people like that."

Sales contests and premiums Mr. Arenson puts in the same class. Strong-arm sales methods are not in line with the company's policy, he summed up briefly. His franchise doesn't allow discounts; he wouldn't use them if it did.

"It's just another way of price cutting, and that in the end lets down the whole sales idea," he analyzed. "Competitors start cutting too, and pretty soon it's just a case of giving away, with profit for nobody."

A thread of price cutting did run through Canton a couple of years ago, the store manager remembered. Two dealers with exclusive franchises cut deep into list prices. But somehow enough others kept an even keel that the scare passed without upsetting the entire local scene. Since then Canton has enjoyed solidarity and good conditions, he nodded.

"And people don't try to scrimp on things that are going to last. The cut-price customer doesn't feel so sure afterwards. If he's naturally conservative and bought for less on the spur of the moment—it may be circumstance or high-pressure salesmanship—he's bound to regret it. There's something inferior about this refrigerator," he reasons. And when something goes wrong, he's sure about it.

"If he bought it because he's a natural bargain hunter, eventually he comes across a place where he could have bought the same model cheaper still, and that spoils it."

"In the end it would reflect back on us. People can't have much confidence in a cut-price concern. If a store builds up a reputation for sticking to its price line, refusing to vary, they keep the respect of the people who deal with them and they keep their own self-respect. It's that extra confidence that people buy," the store manager reminded us, "when they pay top price for an established brand of merchandise."

A nationally-advertised brand is what most people first look for, Mr. Arenson has found. About two years

ago (his company has handled refrigeration since 1932) he included in his display a box with a fine array of gadgets.

"People became very interested. They asked all about it, every convenience from floor pedal to upper door compartments—and we had them all." He leaned back in his chair. "But did they buy 'em? I don't think we sold three."

"That's why we took the Electrolux franchise," he confessed. "Electrolux itself isn't what you'd call a best seller; even in Canton, where it stands very well with a good many people, it's nowhere near the top in sales. G-E is easily in first place, I'd say offhand. Westinghouse and Kelvinator continue to fight for second. Coldspot fourth, Frigidaire fifth—these are all just approximate guesses, you understand. I'm not quoting figures. But Electrolux couldn't be any better than sixth at best."

Questioned as to why he took the franchise, then, Mr. Arenson shrugged his shoulders.

"Because people kept coming in and asking for it. I wasn't trying to play any hunch. It was just that every once in a while somebody would decide they wanted an Electrolux, I guess, and come in here to ask for it. So—this year we have it."

"I don't expect to see any Westinghouse business go over to Electrolux, or to switch people back the other way. We just have it, that's all."

Ideal advertises both refrigerators regularly in newspaper spreads. Direct mail or handbills are too much like cold canvassing, Mr. Arenson shook his head.

"We make all our sales from the floor. I know other firms here have used mailing lists successfully. Personally I don't like it, and I don't think we need it. If there's been anything wrong with our sales policy on refrigerators it was only that we didn't ride them hard enough. Last year was the best year we've ever had. We pushed refrigeration where before we had merely included it, and we sold six times as much as we did in 1935."

The sales idea of "using the user" is one more widely-used sales stunt that Mr. Arenson steers away from, believing that it wears out goodwill.

"If a woman does recommend us to a prospective buyer, we make her

a gift after the sale is completed sometime when they both come in. That clinches it as being open and aboveboard, we figure. But it's on no promise made beforehand, or any understanding of doing so again."

"The boost any user gives entirely on her own is the only one that's really worth anything. And nobody feels taken in afterwards. That's why we wait until both women happen to be here before expressing our appreciation in any substantial way at all."

The firm includes prompt service, however, in its customer policy. One man handles outside servicing, working a full-time detail. On the floor, salesmen are trained to explain anything in the refrigerator's operation or performance.

"Our outside man isn't a salesman in any sense of the word," Mr. Arenson emphasized. "We figure he brings in a lot more business by not trying to give anything but service when he's out on a service call. A customer who's satisfied is a much better indirect salesman. A woman came in just this week because her next-door neighbor had her radio fixed by our man and liked the service she got. We'd much rather have it that way."

#### Grove Relies on Newspaper Advertising for Promotion

R. E. Grove, owner and manager of the Grove Radio and Appliance Shop in Salem, Ohio, started in with a Frigidaire franchise some 10 or 12 years ago. An installation then was something connected with an ice box, the unit itself going into the ice compartment while the compressor was set in the cellar. And they were expensive, costing between \$400 and \$500.

"But they worked," he amended briefly. "There are a couple of them out here on the countryside still working."

Some time after that Mr. Grove shifted to Copeland. And later again, back to Frigidaire, which he kept until just three years ago.

"I liked to shift around, from one kind to another," he explained. "It didn't make much difference then—it was before national advertising came in. I liked the Frigidaire line best."

Why did he change again this last time, we asked.

"Why? Because I had to. The central power company here became my distributor, and decided there wasn't enough business for both of us. And so I took on Crosley—their Sheldahl is a good feature. Last year I tried the Hotpoint franchise with a few units. I'm going to build it up stronger this year; they've got something."

"G-E makes Hotpoint, you know."

And G-E is making only two Monitor Top models this year. Women don't like to bend over; they like the shelves and bottles up where they can get them easily. And so the unit goes in the bottom, and there's room on top.

"It's just because it's a different franchise. There's nothing the matter with G-E so far as I'm concerned except that another dealer already has one agency here. And there isn't enough business to support the dealers we have already, much less try to double up on brands. We've got 10 dealers for 10,000 population, and it just happens that down here it's more than enough."

"The one advantage G-E has of course is in its advertising. Hotpoint isn't half as well known. It's just a case of promoting it around here, for this market."

In such a promotional campaign, Mr. Grove has found newspaper advertising the one steadily effective medium in Salem. His daily spot runs a three-inch minimum, which he hits now and then with a quarter-page spread.

"It's the only way to advertise," he commented shortly. "Keep your name up there in front."

Radio wouldn't go here, was his opinion. Mr. Grove could think of no one who uses it. The cost for station time wouldn't be counterbalanced by the market reached. What combination sales he runs are adequately handled by newspaper. These usually feature washing machines with allied appliances as come-on—ironers, special sets of radio tubes, or whatever seems to be in season.

Home economists' demonstrations come seldom to this vicinity, he said. There were perhaps two all last year.

The electric kitchen idea is coming slowly. General Electric seems to lead the promotion here.

His store maintains its own service department, but the serviceman is not kept busy, added the manager. He takes care of refrigeration only; another man handles radio. Except for bringing the firm name into the home in separate capacities they carry out no advertising schemes. Each sticks to his job, and they seldom overlap even there.

Mr. Grove uses only one salesman, "And he spends half his time out ringing doorbells; well, he has to, to get any extra business. A good percentage of prospects come in, but price cutting is so strong that unless you can produce something for nothing it's hard to make them stay. The manufacturers? Sure, they they object, but not too hard."

"The worst of the practice comes out on trade-ins," he frowned. "An ice box worth one or two dollars brings down the list price of a new refrigerator as much as \$15-20. And plenty of them come in. A lot of families still have them, and a lot of farmers who are off the power lines want them. So they're a stable item of trade still. The market for reconditioned refrigerators is just as good, but very few of them come in. I got only one on a trade-in all last year."

The refrigeration market in Salem ordinarily is quite good, Mr. Grove agreed. Most of the families fall into the \$1,000-\$2,000 income class, and when they buy it's usually a 6 or 7-cu. ft. box of a nationally advertised brand. At present, in the middle of a cut-price period, price is the first question; but that can't last forever, he shrugged.

"It'll take a little time," he said.

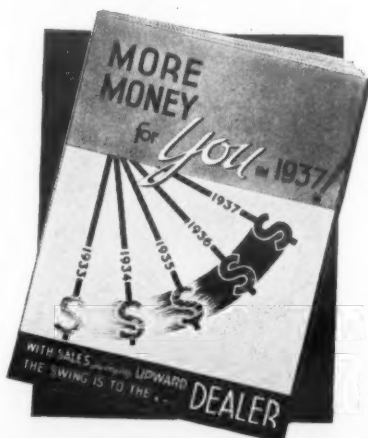
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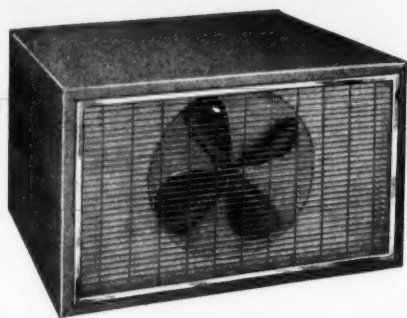
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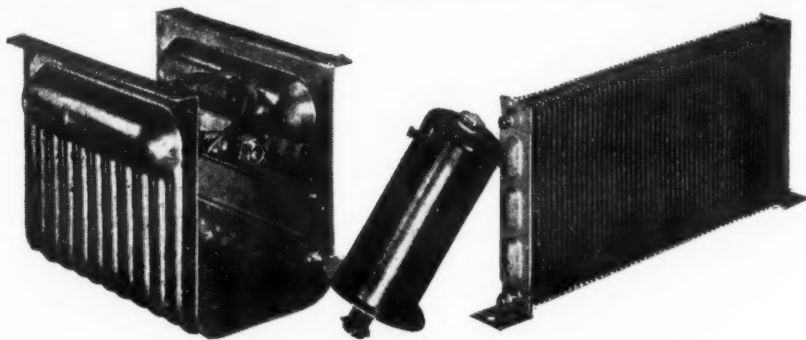
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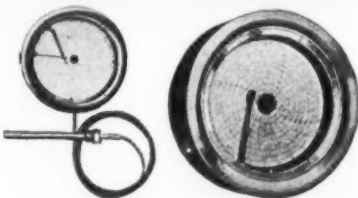
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knowledge of every factor that influences  
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gauges and thermometers provide the  
most effective method of making a con-  
tinuous study of performance.

JAS. P. MARSH CORPORATION  
2067 Southport Avenue, Chicago, Ill.

**MARSH** Refrigeration Instruments



Marsh recording gauges and thermometers  
are available for all applications. Charts of  
recording pressure gauges read in pounds per  
square inch or in atmospheres in accord-  
ance with refrigerant used. Recording  
thermometers are available in standard  
ranges for all applications and with bulbs  
suitable for all media. Multiple pen in-  
struments can be used to record on the  
one chart, temperatures at several points or  
both pressure and temperature.

Write for New  
Refrigeration Catalog

## Miscellaneous Hints for the Engineer And Dealer in Air Conditioning

### SECTION NO. 10 DON'TS

BY F. O. JORDAN

Miscellaneous pointers and hints on  
selection of type of system to use,  
arrangement of tubing, controls, etc.

A. *Jobs to Avoid—Don't* let your  
enthusiasm make you dash in and  
try to grab off every job which comes  
out for figures just because it is  
tagged "Air Conditioning." Most *begin-*  
*ners* do this. The air-conditioning field  
falls naturally into three classifica-  
tions as follows:

1. Installations for the office and  
residence running from  $\frac{1}{2}$  to 10 tons.
2. Installations for large general  
offices or groups of offices, restaurants,  
beauty parlors, department and other  
stores, and other projects running  
from 5 to 100 tons.
3. Very large installations running  
into hundreds of tons. Such installa-  
tions are frequently for large theaters  
and auditoriums, whose latent ratios  
are very high.

The first two of the above classi-  
fications constitute by far the greater  
volume both as to number of installa-  
tions and as to profit. In the future,  
the tendency will doubtless be yet  
further in the direction of the smaller  
installation.

Furthermore, the first two classi-  
fications, being adaptable to standard-  
ization and mass production, possess  
infinitely greater promise of profit, not  
only because of their greater volume,  
but because of their reduced sales  
and overhead costs. This is especially  
true from the field salesman's view-  
point.

It is for the express purpose of  
serving the first two classifications  
that the new air-conditioning organi-  
zation should be geared, and its air  
conditioning equipment be designed.

In the case of those few projects  
where the load is in the neighborhood  
of 100 tons or larger (on one air-  
conditioning system), or whose latent-  
to-total load ratio is abnormally high  
(in the neighborhood of 50% or  
higher), or in the case of projects for  
process air conditioning involving  
special conditions, it usually will  
mean more profits at the end of the  
season to the average air-conditioning  
salesman, if he will devote his atten-  
tion to the much greater field for which  
"package" type of air-conditioning  
equipment is specifically designed,  
leaving the troubles of those projects  
which require special and expensive  
attention and equipment to the spe-  
cialists in those fields.

It must be remembered, however,  
that installations of greater than 100  
tons which are made up of smaller  
systems or units may fall within the  
field of package equipment.

In considering the project of ab-  
normally high latent-to-total load  
ratio, it is well to note that no practi-  
cable coil surface will develop a latent-  
to-total capacity ratio higher than  
45% or 50% with entering air at or  
below a dewpoint temperature of 60°. This fact is true regardless of by-  
passes and other gadgets.

Should he so desire, however, the  
air-conditioning engineer may raise

### McNeilly Appointed Heating Manager of Warren Norge

NEW YORK CITY—Appointment of  
A. D. McNeilly, for 11 years with  
American Radiator Co., as manager of  
the heating division of Warren Norge  
Co., Inc., distributor of Norge prod-  
ucts in the New York area, has been  
announced by Fred Mullins, adverti-  
sing director of the organization.

Warren Norge will shortly launch  
an intensive advertising campaign to  
promote Norge heating appliances, Mr.  
Mullins said. Large space in metro-  
politan newspapers will be used.  
Cramer-Krasselt Co., Milwaukee, is the  
agency.

### Pere Marquette Air Conditions Main Line Equipment

DETROIT—All steel coaches on all  
main lines of the Pere Marquette  
Railway are being air conditioned,  
renovated, and redecorated in what  
is believed to be the largest passenger  
car air-conditioning program in  
Michigan so far this year, reports  
Vice President R. J. Bowman.

The air-conditioning program will  
include all the railroad's Pullman, din-  
ing salon, day coach, and local sleep-

ing cars. All cars will be back in  
service before June 1.

Among the trains to be air condi-  
tioned is the "Resort Special," which  
on June 21 will resume service to  
Michigan's northern resort country.

### Norge Distributor to Retail Conditioning & Heating

MILWAUKEE—Radio Specialty Co.,  
Norge distributor, has opened a retail  
department to handle sales of air-con-  
ditioning and heating units. Frank  
G. Quist has been appointed sales man-  
ager, and Wray Heath engineer.

### Mackie Co. Named New Airtemp Distributor

MINNEAPOLIS—New sales and dis-  
play rooms of J. H. W. Mackie, Inc.,  
Airtemp distributor, were opened Mar.  
6 at 1316-18 Nicollet Ave.

The Mackie company, a new organi-  
zation in this territory, is headed by  
C. L. Holt, president; L. C. Spencer,  
vice president; and J. H. W. Mackie,  
secretary-treasurer. The firm is han-  
dling retail sales in Minneapolis, and  
supplying other sections of Minnesota  
as distributor.

## — AIR CONDITIONING MADE EASY —

ably such prospects are extremely  
dissatisfied owners when they fail to  
obtain the satisfactory performance  
for which they did not pay. Much  
more to be avoided is the unfavorable  
impression received by the public  
regarding the manufacturer of the  
equipment which is used upon any  
unsatisfactory installation, regardless  
of the reason or excuses.

### SELECTING EQUIPMENT

B. *Selection of Type of Equipment—*  
*Don't* try to use a direct expansion  
system for a project which in-  
volves the use of a large number  
of small units without some very  
unusual reason, or don't try to use  
a large number of small self-contained  
direct expansion units in large as-  
sembly halls, and similar large single  
areas. In general, the various types  
of equipment should be used for the  
types of service as given below:

1. *Indirect Expansion System:* This  
type of system should be used gen-  
erally for installations which involve  
the use of a considerable number of  
air-conditioning units in several rooms.

In such a system, the units in each  
room may be controlled by a thermo-  
stat which can function to shut off  
the water supply to, or by-pass the  
water around the units for that room  
only, thus giving temperature control  
for each room independently of the  
other rooms. The other controls for  
the system may be as shown by the  
drawing of the indirect system in  
Section No. 6.

The indirect system also may be  
used to advantage upon projects which  
have very heavy peak loads of short  
duration, as the storage effect of a  
large quantity of water or ice may  
be used to make possible the use  
of a condensing unit whose capacity  
is considerably below the peak load.

A very effective method of storage  
of refrigerating effect is to allow the  
condensing unit to freeze ice in the  
storage tank during the light load  
or off load period as described in  
Section No. 6. With this arrangement,  
the compressor may be allowed to  
operate 20 hours a day. If the load  
exists for only 2 hours per day, the  
hourly capacity of the compressor  
need be only approximately  $\frac{1}{10}$ th the  
2 hour load.

2. *Direct Expansion System:* The  
direct expansion system should be  
used for projects where one to two  
rooms only are to be served by one  
system, regardless of the size of the  
rooms. In some cases, direct expansion  
may be used for a system which  
serves as many as six rooms, provided  
that the controls are arranged as  
described below under "E," Multiple  
Installations.

3. *Well Water System:* When a suffi-  
cient quantity of water is available at  
(Concluded on Page 23, Column 1)



### BARE COMPRESSORS and COMPLETE UNITS

All types for service replacement and new  
installations... One, two and four cylin-  
der models from  $\frac{1}{4}$  h.p. to 20 h.p. . . . For  
Sulphur Dioxide, Methyl Chloride or Freon.  
Write for new catalog—a valuable refer-  
ence for assemblers and service companies.

MERCHANT & EVANS COMPANY  
Philadelphia, Pa., U.S.A., Plant at Lancaster, Pa.



## Air Conditioning MADE EASY

Presented below is the beginning of Section 10 "Don't's" of AIR CONDITIONING MADE EASY, by F. O. Jordan, air-conditioning editor of the News, and former assistant chief engineer of Airtemp, Inc.

The following instalments of the manual have appeared in the News: What is Air Conditioning?—Sept. 23.

Section 1, Introduction, and Section 2, Definitions and Simple Thermodynamics—Sept. 30.

Section 3, Coil Performance—Oct. 7 and 14.

Section 3A, Water Cooler Performance—Oct. 14.

Section 4, Condensing Unit Performance—Oct. 21.

Section 5, Air Movement and Ventilation Requirements—Oct. 28.

Section 6, The Complete Air-Conditioning System for the Cooling Season—Nov. 4, 11, 18, and 25.

Section 7, Heating—Dec. 2, 9, 16, 23, 30, Jan. 6, 13, 20, 27, Feb. 3, 10, 17, 24, March 3, and 10.

## Merritt Harrison Addresses Class On Air Conditioning

INDIANAPOLIS—Merritt Harrison, Indianapolis architect and engineer, addressed the opening session of the advanced air-conditioning class of the Central Y.M.C.A. Tuesday (March 16) on the "Architectural Approach to Air Conditioning."

The course, which is open to high school graduates and persons who have experience in heating and air conditioning, is under the direction of E. S. Hildreth, of the air-conditioning division of the Indianapolis Power and Light Co. Classes are being held Tuesday and Thursday evenings for 12 weeks.

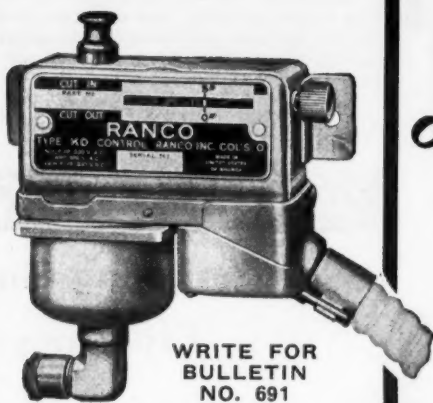
Raymond Von Spreckleson, of the Refrigeration and Equipment Corp.; J. B. Supple, of the American Blower Co., and Barney Morris, air-conditioning engineer of the William H. Block Co., cooperated in planning the course.

## Henry C. Severson Appointed New Airtemp Dealer

FOREST CITY, Iowa—Henry C. Severson has been appointed dealer here for Airtemp, Inc.

## — BUYER'S GUIDE —

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WRITE FOR BULLETIN NO. 691

## Ranco New Type KO Commercial Control

Like every Ranco product ever built, Type KO is compact and accessible—engineered and constructed for accuracy and rugged dependability. It has wide range of adjustment and the range and differential are adjustable from the outside. High capacity—up to ¾ hp. Easily installed.

For Milk Coolers, Walk-in Coolers, Air Conditioning, Ice Cream Cabinets, Display Cases, and general commercial use.

RANCO, Inc., Columbus, Ohio

## — AIR CONDITIONING ENGINEERING —

### Proper Use of Various Types of Air-Conditioning Systems

(Concluded from Page 22, Column 5) temperatures which are low enough to give the desired performance, and when the water contains no ingredients which are harmful to coils or tubing, it frequently is economical and satisfactory to obtain the desired refrigerating effect by circulating the water directly through the coil surface and so dispensing with the condensing unit.

Usually, the employment of this type of air conditioning is feasible if the proper water flow is available at the following temperatures entering the air-conditioning coil, depending upon the types of service as listed:

Sensible Cooling only—60° (or lower).  
Sen. & Lat. for light occupancy—55° (or lower).

Sen. & Lat. for heavy occupancy—45°-50° (or lower).

Large quantities of water at high velocities (5 f.p.s.) through the coil should be used in order to keep the average water temperature in the coil as low as possible, and to keep the inside coefficient of conductivity high. In this way, the coil size will be kept down, and the latent-to-total capacity ratio will be kept high.

The dewpoint temperature of the air entering the coil should be kept high by passing large quantities of outside air through the coil, since the higher dewpoint temperature also raises the latent-to-total capacity ratio. The higher total load imposed by the introduction of large volumes of outside air is usually not objectionable, since the refrigerating medium is cheap.

#### COMBINATION SYSTEM

4. *Combination Well Water and Direct Expansion System:* A combination system consisting of a well water cooled coil through which the air passes first, and a direct expansion coil through which the air passes last is sometimes used under the assumption that a saving in first cost is effected.

Actually, the capacity of the direct expansion coil is considerably reduced because the dry-bulb and dewpoint temperatures of the air which enters this coil have been lowered. For this reason, even though the load upon the direct expansion coil is made less, the coil usually cannot be reduced because of the reduction in capacity per unit of coil size.

Furthermore, there is an undesirable effect upon the condensing unit, for the following reasons: the use of the well water coil lowers the dew point temperature of the air to the

direct expansion coil, and also raises the latent-to-total load ratio upon the direct expansion coil. Since both of these reactions tend to necessitate a lower average refrigerant temperature in the direct expansion coil, the suction pressure, and hence the capacity of the condensing unit is reduced.

For this reason, it frequently is necessary to use the same condensing unit as would be used if the well water cooled coil were omitted, even though the load on the condensing unit is reduced.

For the above reasons, all factors should receive careful consideration before the combination system is adopted.

#### SELF-CONTAINED UNIT

5. *The Self-contained Direct Expansion Unit:* The self-contained unit is complete within itself, consisting of the condensing unit, the air-conditioning unit, and all necessary refrigerant piping and controls, all of which are contained within an ornamental cabinet.

This unit is intended for use in residential rooms, offices, etc., where no satisfactory location for a separate condensing unit exists within a reasonable distance from the air-conditioning unit. When using this type of equipment, it is necessary only to make proper water, drainage, and electrical connections, when the work of installation is complete.

The unit will give satisfaction in any locality within the conditioned space where air circulation is to and from the unit is unobstructed.

#### FLOOR-TYPE UNIT

6. *The Floor Type Air Conditioning Unit:* This unit is intended for use in residential rooms, offices, and other rooms of small or medium size where it is desired to locate the condensing unit at a remote point in case the direct expansion method is used. However, either direct expansion, refrigerated water, or well water may be used as the refrigerating medium under the limitations stated above.

Proper space must be left for refrigerant piping or water circulating piping (depending upon the type of system contemplated), for condensation drainage lines, and also for heating supply and return piping and humidifier supply piping if winter air conditioning is contemplated.

This type of unit will give satisfaction in practically any location within the conditioned space where air circulation to and from the unit is unobstructed.

### St. Louis Statler Hotel Completes Air Conditioning

ST. LOUIS—Air conditioning of the remaining half of the guest rooms in the Statler Hotel here will make in the world's largest air-conditioned hotel, the management claims. Air conditioning was available in the restaurants and in approximately one half of the guest rooms during the past summer.

So popular did air conditioning prove last summer, and so great was the demand for the air-conditioned guest rooms, that the management has decided to provide the comforts of air conditioning for all their guests of this and succeeding summers, as well as take advantage of the increased revenue resulting therefrom.

As will be remembered by those guests of last summer who were fortunate enough to secure lodging in one of these air-conditioned rooms, the feature of the Statler installation is that the clever control arrangement resulting from Statler research and experience allows the guest to "make his own weather" by a mere twist of the wrist.

This control consists of a device which indicates the outside and the inside temperatures, and a radio-like dial which permits the occupant to select the outside air quantity and the room temperature which he may desire both winter and summer.

The present air-conditioning system consists of refrigeration equipment by the Baker Ice Machine Co. of Omaha, which chills water that is circulated by means of a suitable piping system through the Airtemp room coolers concealed under the windows of the guest rooms. It is announced that contracts for extending the present system to the remainder of the building have been let to the Sodemann Heating and Power Co. of this city.

The new extension of the air-conditioning system will add 100 tons of refrigeration and approximately 300 guest rooms to the present installation, bringing the hotel tonnage up to 650 tons of refrigerating effect. When the work is completed, all guest rooms and all public rooms of this large hotel will offer air-conditioned comfort to the traveling and dining public.

### Dail Steel Products Erects Conditioned Office Building

LANSDALE—A completely air-conditioned two-story office building has been completed by Dail Steel Products Co. here. Dail's engineering department did all architecture, design, and engineering work on the job.

A Dail winter conditioner operates on the first floor of the building. A water-cooling system provides summer conditioning. Ceilings throughout the building are of Nu-Wood, an insulating and sound-deadening material.

### More New Jersey Homes Built For Air Conditioning

HACKENSACK, N. J.—An appreciable gain in the number of new homes in Bergen and North Hudson counties built to accommodate some type of air-conditioning installation was announced here recently by the air-conditioning committee of the Hackensack Water Co., which conducted a survey to make possible an estimate of the probable water requirements for cooling systems.

Air-conditioning installations, it was reported, used 20,000,000 gallons of water during the last year in the area supplied by the firm, which represented an increase of about 33% over previous year.

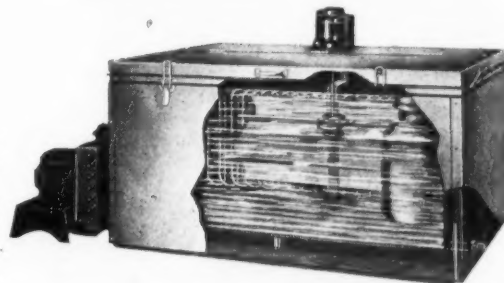
**The KOCH ECONO-CASE**  
The Newest KOCH PRODUCT  
CORKBARD INSULATION  
ALL-STEEL CONSTRUCTION  
Built for SERVICE Priced to SELL  
TRIPLE GLAZING-RUBBER DOORS  
DOUBLE DUTY—6, 8 and 10 ft. LONG

In addition to standard products, Koch now offers the Econo-Case, selling at the very lowest price level, and worthy of the Koch name in every respect. This new display case, sold only through distributors, opens a vast new market for Koch equipment. Write for details.

**KOCH REFRIGERATORS**  
North Kansas City, Missouri

Economical IN COST  
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WRITE TODAY FOR PROPOSITION

### Modern Dairy Farmers Want Modern Equipment Sell them the WILSON VERTI-COIL



THE Wilson Verti-Coil Cooler revolutionizes milk cooling; gives dealers a sales story that measures up to modern dairy demands. The Verti-Coil gives greater cooling surface, induces natural circulation of water, provides more room for cans, assures rapid and uniform cooling. This patented coil can be used with any compressor unit at a cost of but a few cents per day. Cools milk to below 50° in less

than an hour—meeting any milk temperature requirement. It pays to sell a milk cooler line that solves the modern dairyman's problems. Write for dealer proposition today.

WILSON CABINET CORP.

114 MAIN ST.

SMYRNA, DEL.



Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

THE DAYTON RUBBER MANUFACTURING CO.  
DAYTON, OHIO  
WORLD'S LARGEST MANUFACTURER OF V-BELTS

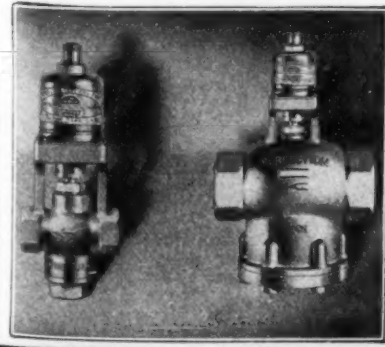
**Dayton**  
V-BELTS

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Condensing Water Regulators are Certified to Excel

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HARVEY, ILLINOIS

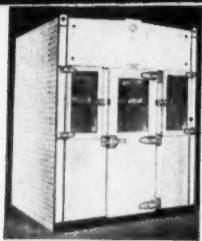




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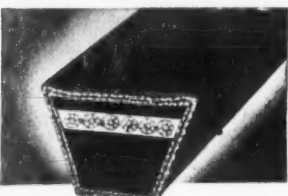
For mechanical refrigeration only

Percival's complete line will increase your sales of electrical refrigeration equipment and offer added earnings. Desirable territories still available. Write for complete information.

1886-1937

51 years of service to meat markets.

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## Get a Gilmer V-Belt HAS FIVE FEATURES!

1. Top tension rubber.
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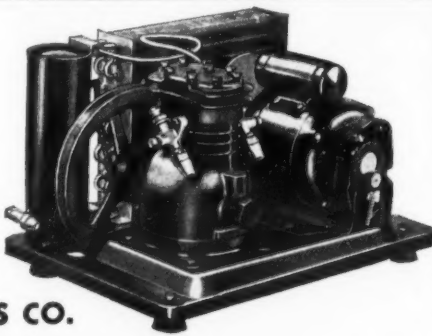
### QUALITY-BUILT COMPRESSORS AND CONDENSING UNITS

The CHIEFTAIN line represents precision manufacture and proven service, and is designed for all domestic and light commercial applications.

Sizes range  $\frac{1}{8}$  to  $\frac{3}{4}$  HP.

Write for prices.

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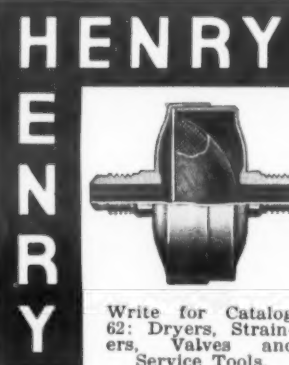
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CONDENSING UNITS from  $\frac{1}{4}$  to 2 H.P. Air and Water Cooled.

### BARE COMPRESSORS

DIRECT DRIVE CONDENSING UNIT  $\frac{1}{2}$  H.P. with exceptional capacity for household refrigerators. Particularly recommended for replacement of obsolete hermetic units.

Attractive Prices  
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## Small Strainer

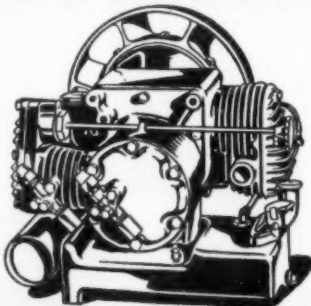
TYPE 890

Hemispherical screen has 70% more capacity than usual flat disc. Soldered brass shell. 120 mesh brass screen with No. 10 mesh brass screen reinforcement. Screen area, 4 sq. in. O. D. of shell 2 in. Weight 4 oz. \$2.60  
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Stocked by Leading Jobbers

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## ICE ENGINE—Gasoline Powered



Engine and Compressor one balanced Unit designed and built by the largest manufacturers of Gasoline Engines in the World.

Compressor,  $2\frac{1}{4} \times 1\frac{1}{2}$  is driven at 625 RPM, one-half Engine Speed, and is oiled for life. Engine displacement—8.95 cu. in. Compressor—5.96.

Ideal for grocery and delicatessen Cabinets, medium size display and Freezer Cases, Ice Cream Cabinets, Soda Fountains, Milk Coolers; Multiples of domestic Cabinets or small commercial Units.

Price reasonably low, liberal dealer discount.

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**NATIONAL ELECTRIC TOOL CO.**  
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## Synopsis of Service Manual

On this page is a continuation of Chapter 7 of the COMMERCIAL SERVICE MANUAL by K. M. Newcum, author of the popular MASTER SERVICE MANUAL.

A summary of the previous installments follows:

Chapters 1 and 2 were omitted from the News, as they are of basic material which has previously been covered in the paper, but they will appear in the completed book.

Chapter 3, Cylinders, Valves, and Safety Devices for Refrigerants—

Aug. 5, 12, and 19.

Chapter 4, Methods of Transferring Refrigerants to Smaller Cylinders—Aug. 19.

Chapter 5, Drying of Refrigerants—Aug. 26.

Chapter 6, Commercial Condensing Units—Sept. 2, 9, 16, 23, 30; Oct. 21; Nov. 4, 11, 18, 25; Dec. 2, 9, and 16.

Chapter 7, Evaporators and Refrigerant Control Valves—Dec. 23, 30; Jan. 6, 13, 20, 27; Feb. 3, 10, 24; and March 3.

## COMMERCIAL REFRIGERATION SERVICE

### Designing Fin Coils for Greatest Efficiency; Use of Baffles

#### CHAPTER 7—Evaporators & Refrigerant Controls (Cont.)

BY K. M. NEWCUM

All of the coil manufacturers have their own coils rated according to their individual capacities, and these ratings plus a method of selecting the proper coils are in their sales manual or catalog.

The larger manufacturers who make both coils and compressors often actually specify a certain coil model for a certain size and type refrigerator to balance with a certain size and type of compressor.

The depth of the coil is also a determining factor as to its capacity. For example, refer to Fig. 140. Coil No. 1 is six rows of tubes deep. The air in passing over the first or top row of tubes say, for example, at 42° F. is chilled to 38° F., then the 38° F. air passes to the second row and is chilled to 36° F., then to the third row and is chilled to 35° F. The 35° air then passes over the three remaining tubes to be chilled to possibly 33° F. as it leaves the coil.

This example illustrates the fact that while the top two or three rows of tubes chill the air several degrees, the bottom rows are very inefficient.

Note coil No. 2. It is the same as No. 1 only turned on its side giving it a much larger top surface and is only four tubes deep. Coil No. 2 will be much more efficient than coil No. 1.

Take coil No. 3. Assume it has the same number of square feet of surface as coils number 1 and 2, but the surface is distributed to give a still larger top row surface and less depth. Coil No. 3 will operate at a higher back pressure and produce more refrigeration than will coils 1 and 2.

The length of the coil should also be taken into consideration. First, it is more economical to select a long coil as there are less joints and material in assembling, and second, its length should be approximately 12 inches less than the inside length of the refrigerator. In other words, distributing the coil the full length of the box will give better air distribu-

tion than a square coil in the center of the box.

The trend on fin coils seems to be toward flat shallow coils spread out over the top of the refrigerator.

The question of baffles is still debatable. Some authorities claim a coil, if properly distributed over the top of the refrigerator, functions better without any baffle at all, believing the baffle hinders circulation.

Most refrigerator manufacturers have conducted tests to arrive at the best baffling arrangement for each particular type of refrigerator. It is considered good policy on new refrigerator installations to follow the recommendations of the refrigerator manufacturer, thus placing the responsibility where it belongs.

The Peerless flash cooler, Figs. 141 and 142, is a very good example of a single row coil which is suspended from the ceiling of the refrigerator and is provided with dripshields. Results obtained from this type of coil have been very good both from the standpoint of efficiency, circulation and humidity.

The Fed-R-Vex drain baffles are shown in Fig. 143. They are adjustable and may be attached to a shallow coil as shown in Fig. 144 to form a combination drain and baffle. Note in

Fig. 142—Air Flow Through Coil

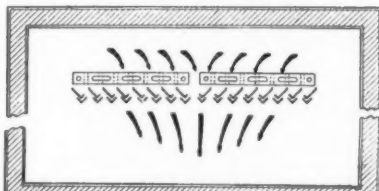


Fig. 142. Drawing which illustrates nature of air flow through single-row coil provided with dripshields.

Fig. 140—Variations in Coils

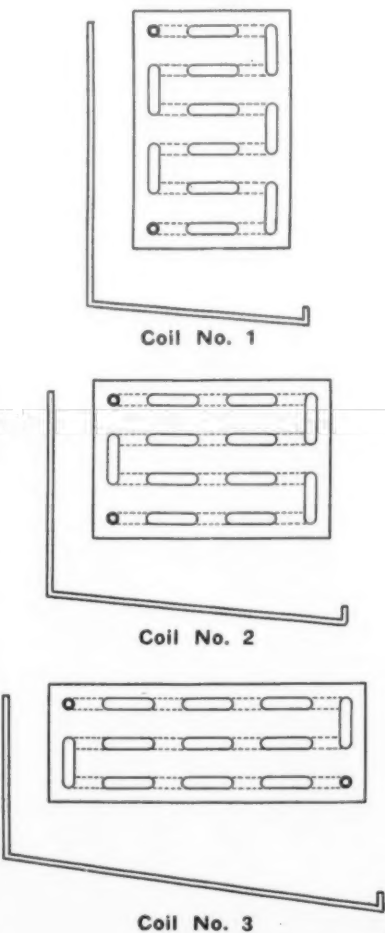


Fig. 141—Peerless Flash Cooler

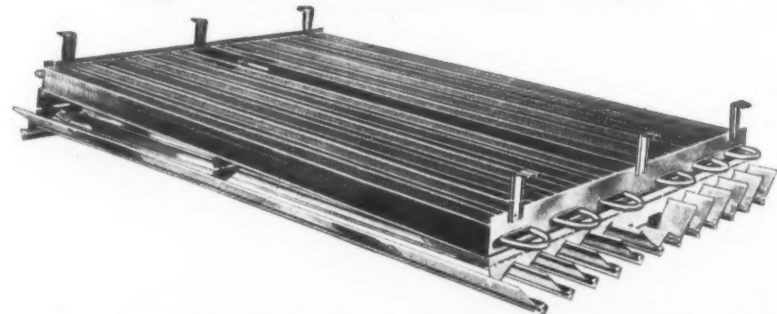
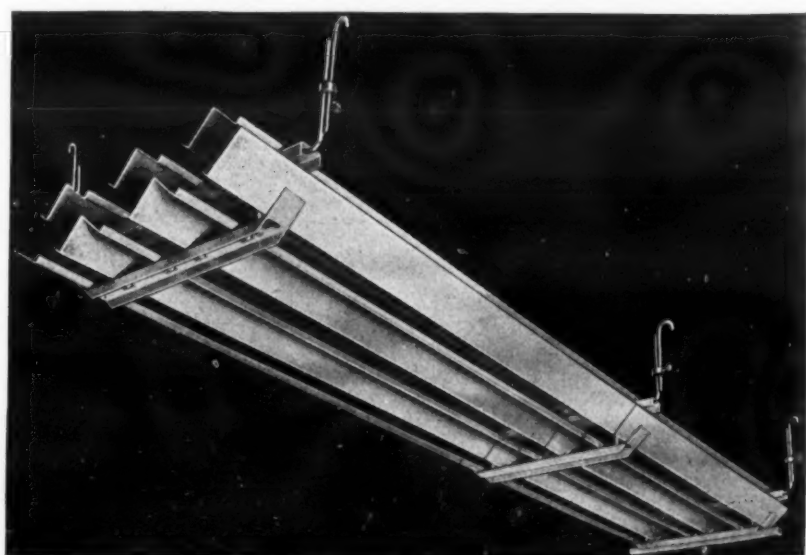


Fig. 143—Fed-R-Vex Drain Baffle



### Midwest Airtemp Corp. Appoints Dealers in 12 Kansas Cities

WICHITA, Kan.—Dealerships for Airtemp air-conditioning equipment have been established in twelve Kansas cities, officials of Midwest Airtemp Corp., distributor, announce. Cities are Hutchinson, Dodge City, Pratt, McPherson, Beloit, Concordia, Emporia, Coffeyville, Independence, Parsons, Iola and Chanute.

P. W. Thomas is vice president and general manager of the distributing firm, and Harry Hald sales manager.

Fig. 144—Coil Installation

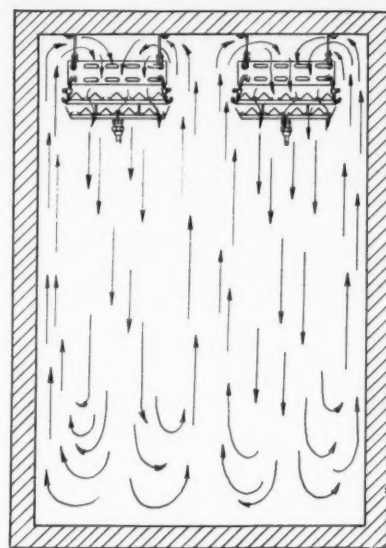


Fig. 144. Coils with Fed-R-Vex drain baffles installed in a walk-in cooler. Coils cool the air as it flows downward in "natural convection" currents and the drain baffles help provide proper distribution of the refrigerating effect.

Fig. 144 the air circulation and distribution throughout the entire refrigerator.

Frigidaire manufactures both what is termed dry expansion and wet expansion coils.

The term dry expansion coil is intended to mean a continuous tube coil such as illustrated in Fig. 145 which, during the off-cycle, maintains a relatively small amount of liquid—this theoretical amount being clearly illustrated in Fig. 145.

During the on-cycle, this dry expansion coil will be filled with liquid and saturated vapor up to the point of superheat near the tail end of the coil. The velocity of the incoming liquid through the expansion valve plus the sucking action of the compressor provides for this distribution during the running cycle. During the off-cycle, however, the liquid will drop to the bottom of the coil where the coil is perfectly level and not designed to provide a trap or series of traps

(Continued on Page 25, Column 1)



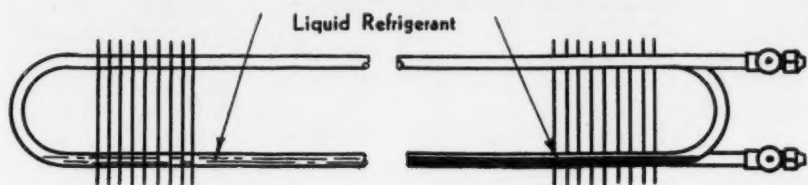
**Fig. 145—Dry Expansion Coil**

Fig. 145. The term dry expansion coil is intended to mean a continuous tube coil, which maintains a relatively small amount of liquid during the off cycle, as shown here.

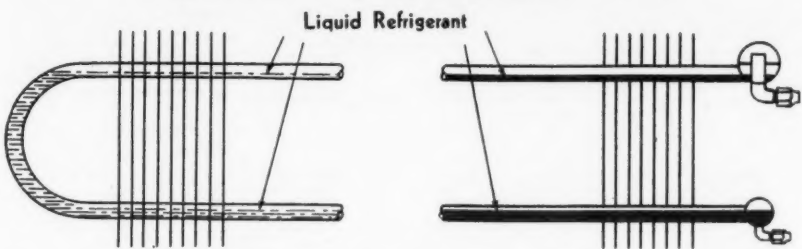
**Fig. 146—Wet Expansion Coil**

Fig. 146. Wet expansion coil. The suction gas out in the header in the top tube is above the tube level, providing a trap, and maintaining a liquid level in both tubes at all times.

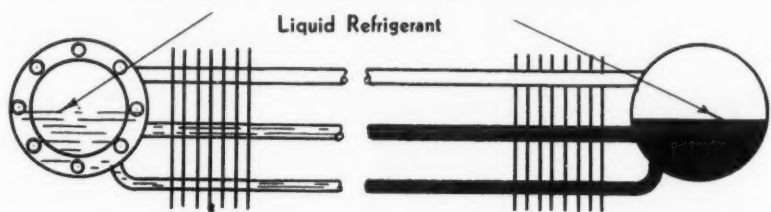
**Fig. 147—Lowside Float Coil**

Fig. 147. How liquid level is maintained in a lowside float coil.

### Use of Headers in Expansion Coil Installations

(Concluded from Page 24, Column 5) to prevent the liquid from flowing downward by gravity.

Frigidaire's so-called wet expansion coil is shown in Fig. 146. Note that the hair pin loops of the coil are connected to a liquid header at the bottom and a suction header at the top. Note the suction gas outlet in the header is above the tube level, thus actually providing a trap, thereby maintaining a liquid level in both the top and bottom tubes, even during the off-cycle.

This wet expansion coil is intended to approximate the conditions in a lowside float coil which for comparison is shown in Fig. 147.

A typical installation of the wet-type expansion coil is shown in Fig. 148. The wet type coil is assumed to have a higher capacity than the dry type. It is also more expensive.

The practice of using headers on expansion coils is becoming more popular particularly on the larger coils built for Freon-12. The advantage of a headered coil first is that when headers are used on the inlet and outlet of a row of tubes, the total travel of the refrigerant is reduced to the actual length of the single coil or what is the same thing, with the travel reduced the pressure drop is reduced.

Freon-12, as we know, has a higher density and lower latent heat than, for example, methyl chloride. If the total length of a dry expansion coil is excessive, then a pressure drop will result. The headered coil, by reducing the travel, materially reduces the pressure drop.

For all practical purposes on small typical market installations, the dry expansion coil is very satisfactory. Where two or more coils are used, a separate thermostatic expansion valve is used on each coil, especially when the total length of tubing in the coils approaches a length that might result in a noticeable pressure drop.

Larger forced air or blower units where high velocity refrigerant is

being handled are headered to provide better distribution and lower pressure drop. It is not considered necessary to header the small blower units.

### Insulite Cuts Air Conditioning Costs for Mortuary

TOLEDO—Owners of Abele Funeral Home claim that installation of Insulite interior finish has resulted in reduced operating costs of the mortuary's air-conditioning system, and in improved functioning of its public address system.

Gallant Lumber & Coal Co., Insulite dealer, sold the insulation to George Stader, contractor in charge.

### Tag Issues New Catalog on Non-Indicating Controllers

BROOKLYN—C. J. Tagliabue Mfg. Co. has just issued a new catalog, No. 900C, describing and illustrating the latest models of Tag non-indicating controllers for temperature, pressure, and time.

In addition to instrument listing, the catalog also contains a comprehensive discussion of various types of Tag controllers, their applications, and how they work.

### Individual Conditioning of Apartments Feature of Boston Building

BOSTON—An apartment building featuring individual air conditioning of its apartments and refrigeration of food by a gas-fired absorption system is now under construction here.

The completion date of the building is set for August of the year, and when completed, it will be one of the largest apartment buildings here. The site is at 1962 Commonwealth Ave.

It is said that each apartment will have its own separate system, supplying filtered air at the temperatures and humidities proper for comfort, and that an adjustable thermostat in each apartment will be the occupants' complete control of temperatures.

The air in the rooms will be kept constantly fresh by the addition of a proportion of outside air. In this way, the selectivity as to temperature available in the single home is provided for the apartment dweller.

"The circulation system is such that no air nor odors can pass from one apartment to another," explained E. M. Farnsworth, vice president and general manager of the utility company.

"The system thus gives each apartment the advantages of the individual home and eliminates dependence on a single central plant. During the summer months, outside air may be brought indoors simply by operating the small circulating fan, and cool night air can be drawn in to keep the apartment comfortable next day."

Winter heating is accomplished by gas, while the system is arranged to take advantage in summer of the cooling effect of introducing night air.

### Oil Burner for Trailers Is Being Marketed By Motor Wheel

LANSING, Mich.—A new fuel oil-burning circulating heater for the automobile trailer has been announced by the duo-therm division of Motor Wheel Corp., producer of oil-burning appliances, which the manufacturer claims offers completely new standards of trailer-heating efficiency, cleanliness and convenience.

Incorporating the same dual-chamber burner principle used in the duo-therm line of oil-burning homeheaters, cooking ranges, water heaters and other appliances, the duo-therm trailer circulator not only eliminates the work of building fires and carrying ashes, but is said to give an all-weather clean fire range which results in constant, uniform, regulated heat under all conditions.

The entire unit is enclosed in a tailored cabinet finished to harmonize with the usual trailer interior.

### Pillen Made Representative For Marsh Instruments

CINCINNATI—Harry A. Pillen has been appointed sales representative in this territory by James P. Marsh Co., Chicago manufacturer of steam specialties, air valves, gauges, thermometers, and industrial instruments.

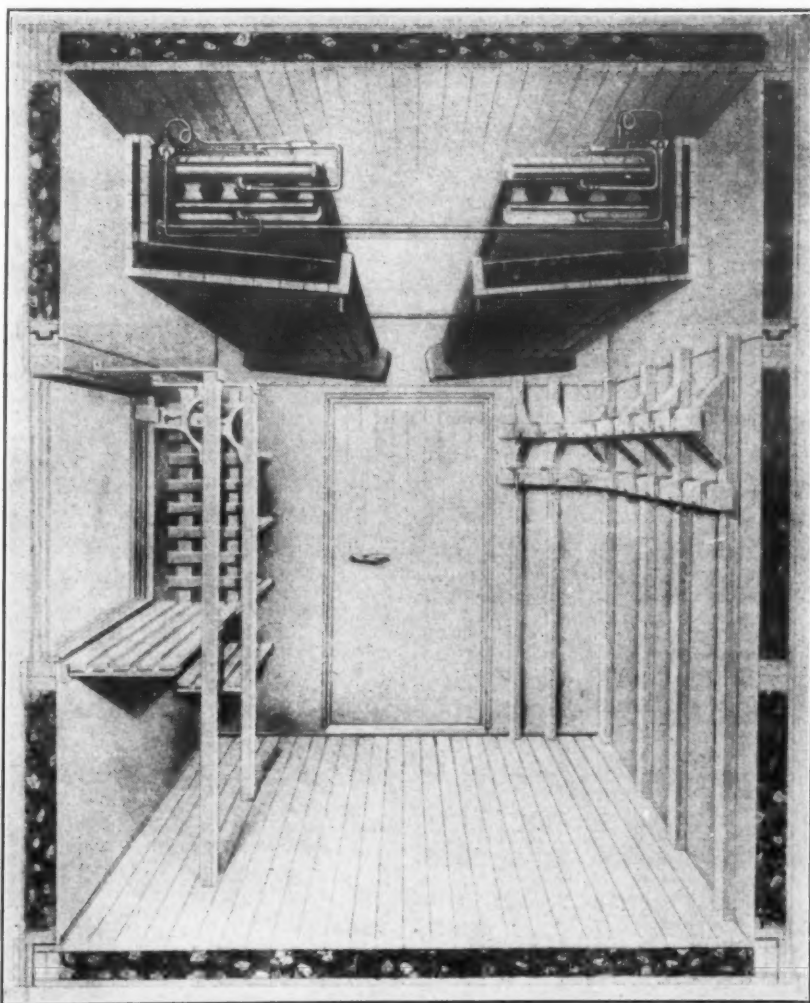
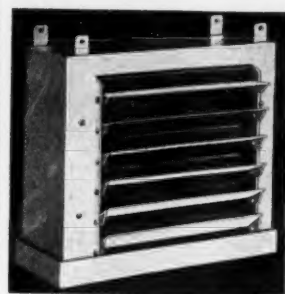
**Fig. 148—Use of Wet Expansion Coil**

Fig. 148. Installation of wet expansion coils in a typical walk-in cooler.

## BUYER'S GUIDE

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### UNIT BLOWERS

Pipe Coils  
Air-Conditioning Coils

### FIN COILS

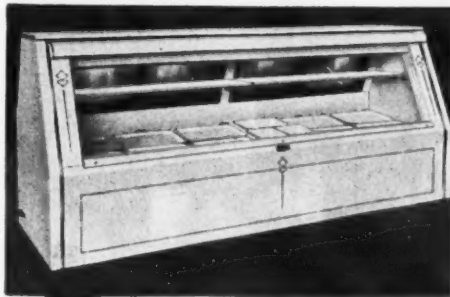
5/8" — 3/4" — 1"

Steel or Copper

### REMPE COMPANY

340 N. Sacramento Blvd. Chicago, Illinois

REMPPE



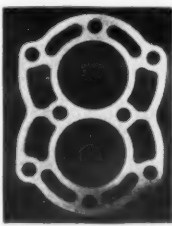
### THE 3600 LINE OF DISPLAY CASES

MORE SQUARE FEET OF DISPLAY SPACE THAN MANY CASES CONSIDERABLY LARGER

Three sizes are available—6, 8, and 10 feet long—and you have your choice of Porcelain or DuLux finish. Among the features are extra large rubber composition sliding doors; extra height doors for storage compartments; full view of illuminated display section; removable intermediate shelf; and 3" approved insulation. For real convenience, economy, room and accessibility, these cases have no equal.

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## GASKETS for ELECTRIC » » REFRIGERATION

offer you Metallic Gaskets that hold regardless of what your refrigerant may be and will not shed particles of material to clog up important working parts in a machine. A metal that will not "creep." Once tight it will stay "tight."

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The new SHERER Produce Cases with or without refrigerated storage have the latest addition to Sherer's complete line of cases and coolers. Eliminates 8% to 10% loss factor caused by spoilage and shrinkage—keeps produce well refrigerated. New developments like this keep Sherer ahead of the parade!

Addition of the Sherer Case and Cooler Franchise to your present line is your move for '37. Desirable territories still available. Write us for details.



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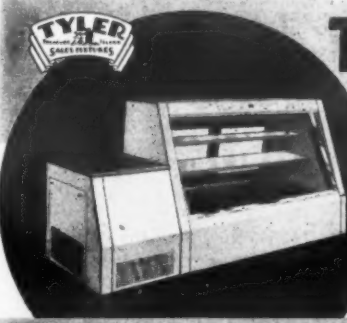


WRITE FOR NEW 1937 CATALOG

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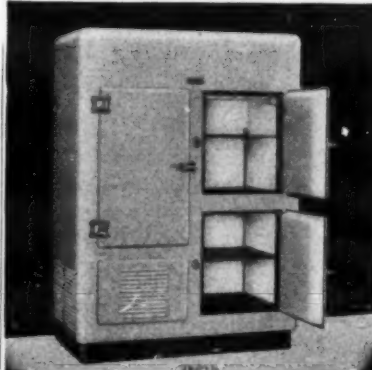


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1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

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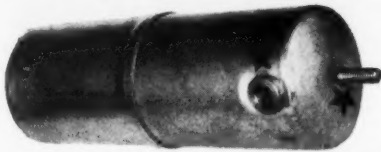


## BUYER'S GUIDE

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This receiver tank is made with special stampings brazed in a controlled atmosphere electric furnace. This process is the newest of our facilities for producing Pressed Metal Products. We furnish stampings, assemblies, hydrogen brazing and enameling. Stamped compressor bases are one of the many items we supply. Check us for prices.



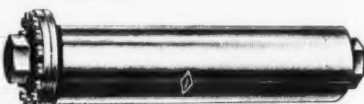
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### A NEW DEHYDRATOR FOR THOSE BIGGER JOBS

THE new Imperial steel dehydrator is designed for refrigeration and air conditioning work. It has a steel shell with bolted flanged end. The shell is 4 inches in diameter and is furnished in 18, 24 and 36 inch lengths. Ends have 1 1/2 inch female iron pipe thread and screens and steel wool are included.

IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicago



Other dehydrators have been added to the Imperial line, including a refillable cartridge type, another with dispersion tube and a very small, inexpensive size for permanent installation on small systems. Write for the new Imperial refrigeration catalog.

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VALVES • FITTINGS • TOOLS • CHARGING LINES • STRAINERS • FLOATS

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means  
**"COMPLETE CONTROL"**  
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COMMERCIAL — AIR CONDITIONING  
From 2 gals. per hour to 500 gals. per minute  
WATER FILTERS — STEEL PIPE COILS — SURGE TANKS  
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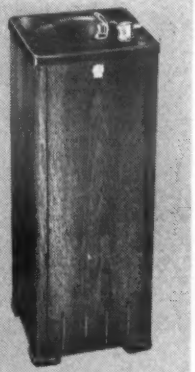
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WATER coolers will be sold in increasing volume this spring and summer. Business men are buying new equipment, modernizing plants and offices. Cash in on this profitable business with Cordley Electric Water Coolers... made by an organization that has specialized in water coolers since 1889... small, compact, inexpensive, good looking units... a complete line... an easy way to get added sales and extra profits. Write for details.

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Type X — 53" long — Type Y — 70" long, both with 8 inch rubber tired wheels. Fitted with movable foot or with permanent wide foot for skirted bottom cabinets.

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Write for Bulletin

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Dayton, Ohio 407 S. Dearborn St., Chicago, Ill 15 Park Row, N. Y.

## - PATENTS -

Issued Feb. 16, 1937

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2,070,659. COMPRESSOR VALVE. William W. Higham, Detroit, Mich., assignor to Universal Cooler Corp., Detroit, Mich., a corporation of Michigan. Application Aug. 15, 1935. Serial No. 36,362. 11 Claims. (Cl. 251-119)

2,070,690. AIR CONDITIONER. Rulo Wayne Smith, Auburn, Ind. Application Sept. 4, 1934. Serial No. 742,692. 3 Claims. (Cl. 257-137)

2,070,729. APPARATUS FOR COOLING AND FREEZING FOOD PRODUCTS. Chester A. Harsch and Dale A. Fingerhuth, Portland, Ore. Application July 26, 1935. Serial No. 33,351. 8 Claims. (Cl. 62-114)

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2,071,026. CONDENSER FOR AIR CONDITIONING SYSTEMS. Powel Crosley, Jr., Cincinnati, Ohio, assignor to The Crosley Radio Corp., Cincinnati, Ohio, a corporation of Ohio. Application March 12, 1934. Serial No. 715,077. 9 Claims. (Cl. 257-39)

2,071,085. REFRIGERATOR DOOR HINGE. Edwin North, Rockford, Ill., assignor to National Lock Co., Rockford, Ill., a corporation of Delaware. Application March 25, 1936. Serial No. 70,739. 9 Claims. (Cl. 20-35)

2,071,133. BEVERAGE COOLING SYSTEM AND APPARATUS. Michael A. Martin, Erie, Pa., assignor to Uniflow Mfg. Co., Erie, Pa., a corporation of Pennsylvania. Application Feb. 20, 1935. Serial No. 7,421. 3 Claims. (Cl. 62-141)

2,071,148. DEFROSTING SIGNAL FOR REFRIGERATORS. Harold J. Weisberg, Brighton, and Charles E. Ide, Greece, N.

Y. Application March 27, 1935. Serial No. 13,306. 2 Claims. (Cl. 177-311)

2,071,175. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application May 24, 1934. Serial No. 727,262. 8 Claims. (Cl. 62-6)

2,071,182. REFRIGERATING MACHINE CONDENSER. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Original application Jan. 26, 1935. Serial No. 3,624. Divided and this application Sept. 24, 1935. Serial No. 41,929. 5 Claims. (Cl. 257-36)

2,071,183. REFRIGERATOR. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application Jan. 26, 1935. Serial No. 3,624. 18 Claims. (Cl. 62-116)

2,071,188. CIRCULATING LIQUID COOLER. Robert O. White, Manhattan Beach, Calif. Application Feb. 12, 1935. Serial No. 6,162. 21 Claims. (Cl. 62-141)

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20,268. REFRIGERATING APPARATUS. Mortimer W. Fish and Harry F. Clark, Dayton, Ohio, assignors, by mesne assignments, to General Motors Corp., a corporation of Delaware. Original No. 1,883,891, dated Oct. 25, 1932. Serial No. 424,333. Jan. 29, 1930. Application for reissue Aug. 30, 1934. Serial No. 742,140. 2 Claims. (Cl. 200-124)

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASBE), Patent Attorney, 342 Madison Avenue, New York City.

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RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS WANTED

HAVE BEEN in my present position four years as buyer and salesmanager of major appliances in a large department store in the Middle West. Have increased volume 400%. Am limited as to future expansion and possibilities. Would be interested in new connection with department store or first rank manufacturer. Box 908, Air Conditioning and Refrigeration News.

### EQUIPMENT WANTED

WANT TO BUY old, new, discontinued commercial refrigerators 14 cubic feet to 75 cubic feet. Any quantity. Also used, new compressor units all sizes to 2 HP. Also quantity domestic refrigerators all sizes new, second hand, repossessed, and discontinued models. We pay cash. INTERSTATE REFRIGERATOR CORP., 96 Fifth Ave., New York City.

DEFECTIVE GENERAL ELECTRIC monitor top units wanted to purchase. Please give full details as to condition, type, form, and serial number. Also state price you want. REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

### EQUIPMENT FOR SALE

MAJESTIC SURPLUSES. 1000 complete conventional and hermetic type units as is \$15.00. New evaporators \$4.00. New Majestic capacitor motors \$4.50. New refrigerator shelves \$5.00 hundred. New copper gas condensers \$2.00. Electrolytic condensers .75. 2 hour test cabinets with air lifts and Bristol recorders \$7.50. 3/16" tinned copper tubing .30 lb. Discounts on quantities. G & G COMPANY, 5801 Dickens, Chicago.

### REPAIR SERVICE

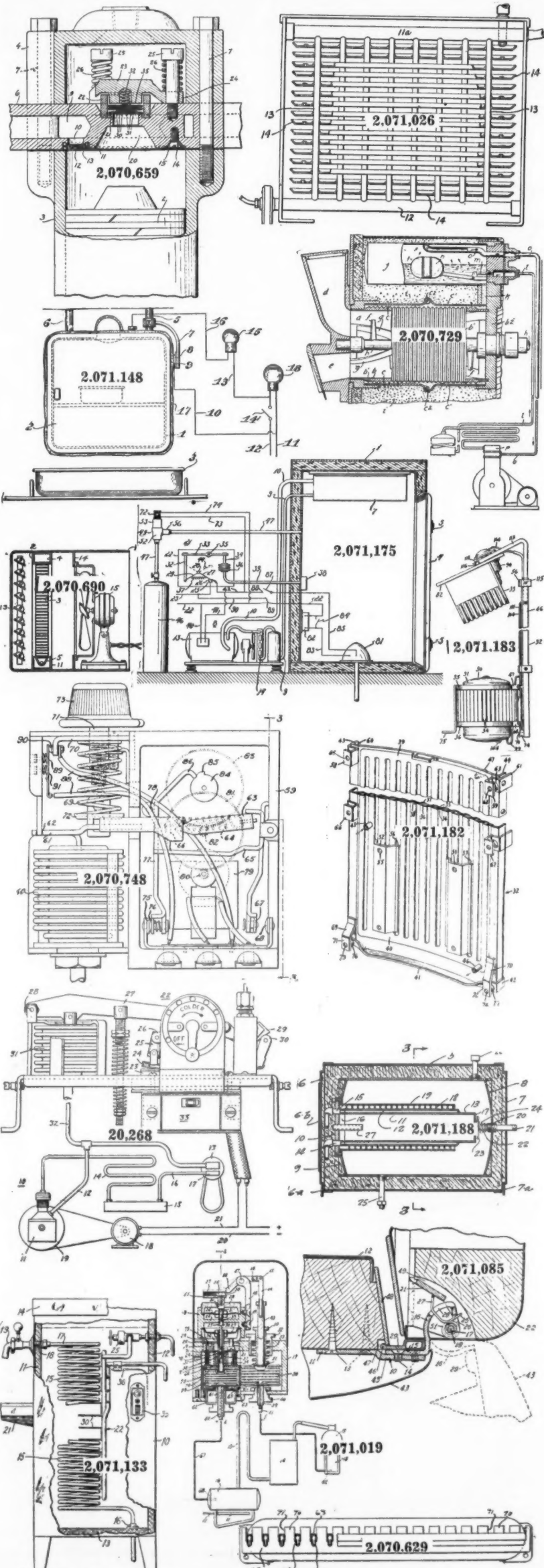
MAJESTIC — GENERAL ELECTRIC — SERVEL hermetic units repaired and exchanged. Majestic with six month's factory guarantee \$18.50, with one year factory guarantee \$20.50. General Electric monitor top domestic units with one year factory guarantee \$25.00. Servel hermetic units with one year factory guarantee \$18.50. Prices f.o.b. our factory. Every unit undergoes complete tests for temperature, cycling, wattage consumption and quietness on genuine test equipment. See our advertisement in this issue under "Buyer's Guide". REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

GENERAL ELECTRIC and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale only. Give model when writing. All prices quoted f.o.b. Chicago. AMERICAN REFRIGERATING ENGINEERS, INC., 2267 Silverton Drive, Chicago, Illinois.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows Halelectric can repair it. Service prompt, prices right, guarantee reliable. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

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ATTENTION, SERVICE MEN! Write for particulars concerning our extension course designed especially to give you a thorough knowledge of the technical part of refrigeration and air conditioning. For men with no refrigeration experience, we recommend our resident course. DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING, 4125 Grand River Ave., Detroit, Mich.





## They Learn to Teach Others



Head service men for the distributors of Fairbanks-Morse electric refrigerators attended a four-day "teacher's school" at the factory at Indianapolis recently. Idea back of the school was to give the men a post-graduate course so that they in turn, with factory service engineers, can

conduct dealer service schools in their respective territories. The school was under the direction of George Glassman, F-M service manager, who was assisted by executives from the engineering, production, and sales divisions.

## Wisconsin Utility Group Sees Need for Trained Service Men

MADISON, Wis.—Recognition of the growing need for trained service men to handle the repair and service work of electric appliances is shown in the 1936 report of the service operations committee of Wisconsin Utilities Association.

With the increase in appliance sales, this report points out, there is a corresponding increase in the amount of service work required. Likewise, with the growing complexity of appliances, the service man's task necessarily becomes more complex, and adequate training becomes an absolute prerequisite.

The utility report suggests that a staff of specialists in each line of service work be maintained in metropolitan areas, and rural areas be covered by men trained in all service operations.

## 'Frosted Wool' Process to Be Described to Boston ASRE

BOSTON—"The Frosted Wool Process," a recent development using sub-zero temperatures to produce a stronger, more elastic wool for scouring purposes, will be described by H. C. Turner, general manager of the Frosted Wool Process Co., before the meeting of the Boston section of American Society of Refrigerating Engineers on Friday, March 19, at Walker Memorial, Massachusetts Institute of Technology.

## REFRIGERATION SUPPLY JOBBER ACTIVITIES

### McKinley Named Chairman At Meeting of Texas Jobber Association

FORT WORTH, Tex.—To further the work being done by the national organization, encourage local membership, and unify refrigeration supply jobbers in the southwest, a meeting of Texas refrigeration supply jobbers was held recently at McKinley Refrigeration Supply Co.

After spending the afternoon in discussion, the group was served a beef-steak dinner at the McKinley home. Following the dinner, Mr. McKinley was elected temporary chairman, and Mr. Sparkman was elected temporary secretary.

Those attending the March meeting were: John McKinley, host to the group; Mr. Sparkman, Automotive Refrigeration Supply Co., Dallas; U. C. Boyles, Refrigeration Supply Co., Dallas; Sidney Gaines and Mr. McDavis, United Electric Service Co., Wichita Falls, Tex.; Alex Travine, Westbrook Carb. & Electric Co., San Antonio, Tex.; D. C. Lingo Co., Houston, Tex.; Frank Langsenkamp, Indianapolis; J. D. Kane, Jas. P. Marsh & Co., Chicago; C. P. Williams, L. H. Gilmer Co., Philadelphia.

### Pratt Heads San Francisco Easter Sunrise Services

SAN FRANCISCO—Sunrise Easter service on top of Mt. Davidson near here will be managed this year principally by officials of the California Refrigerator Co., refrigeration supply jobbers here. Clarence F. (Sandy) Pratt is honorary chairman, Lem V. Branson is vice chairman, and Jess Rauch directs finance and trails.

The entire organization of the California Refrigerator Co. will be on Mt. Davidson Easter morning, assisting the different committees. It is predicted that 50,000 worshippers will make the climb for the services.

The red network of the National Broadcasting Co. will broadcast the services from 6 a. m. to 6:30 a. m. (PST) on a coast-to-coast hookup.

Mr. Pratt is one of the founders of these services.

### Emerson Electric Co. Moves Offices

ST. LOUIS—Offices of Emerson Electric Mfg. Co. have been moved to a modern two-story building at 1824 Washington Ave.

The new quarters, comprising approximately 34,000 sq. ft. of floor space, are equipped with modern office fixtures, including indirect lighting and electric water coolers. All machines have been segregated in an enclosed portion of the office, eliminating a considerable amount of the customary office noise.

The space formerly devoted to office use has been absorbed by the manufacturing department.

### Albert Marshall, Pioneer Design Engineer, Dies

HARTFORD, Conn.—Albert T. Marshall, 69, for many years designing engineer of the Automatic Refrigerating Co., and regarded as a pioneer inventor in the field, died Mar. 6 at his home here. One of the first successful automatic refrigeration machines was made from his patents, it is claimed.

### New Kelvinator Dealer In Charlestown, Va.

CHARLESTON, W. Va.—The King Jewelry Store has been appointed a Kelvinator dealer here, Harry Bedwinek, manager, announces.

### Noland Co. Enters Jobbing Business in Norfolk

NORFOLK, Va.—Noland Co., at 24th and Church St. here, has entered the refrigeration supply jobbing business to serve dealers and service men in the Norfolk territory.

While arrangements with several manufacturers are still incomplete, the firm will handle, among other things, products manufactured by Kerotest Mfg. Co., Fedders Mfg. Co., Chase Brass & Copper Co., Inc., and American Radiator Co.

The company is a branch of Noland Co., Inc., with main offices at Newport News, Va., and 16 branch offices in cities throughout the southeast.

J. F. Boynton is manager of the Norfolk branch, and C. C. Creighton will be in direct charge of refrigeration supplies sales. Mr. Dettmar will have charge of over-the-counter sales to dealers and service men.

### Republic Electric Co. Moves Stock Room

DAVENPORT, Iowa — Republic Electric Co., refrigeration supply jobber, has separated its stock room from its other divisions, and moved it to larger quarters in a different portion of the building.

As a result of the reorganization, Republic's shipping room is now conveniently located near the loading elevator and platform. A new service counter also has been built.

### Melchior, Armstrong, Dessau Opens New Branches

NEW YORK CITY—Announcing the opening of new branch offices in Washington, D. C., and Hartford, Conn., Melchior, Armstrong, Dessau Co., jobber of refrigeration, heating, and air-conditioning supplies, has published outline maps of these two cities showing the location of the new distributorships in relation to the city's important streets and principal points of interest.

## QUESTIONS

### 'Orphan' Companies

No. 3030 (Manufacturer, Ohio)—"I believe it was in 1932 or 1933 that you published a list of refrigerator companies which totaled around 230 whose products are now 'orphans.'"

"Did you make a similar count during 1936 and if so would it be possible to send us a copy by return mail."

"It may be that a count of the companies listed in your 1935 Directory would be as good a way as any to get this figure at the present."

Answer: Company history on all known manufacturing concerns which once produced household electric refrigerators, but which are no longer active in the household refrigeration field, is part of the information included in the 1936 REFRIGERATION & AIR CONDITIONING SPECIFICATIONS BOOK, which sells for \$3.

### Municipal Codes

No. 3031 (Jobber, Ohio)—"We wonder if it will be possible for you to send us a list of all the issues of the News in which any of the various municipal codes covering installation and other phases of refrigerating systems are reprinted."

"Such information will be very much appreciated, and in all probability we will order one copy of each issue in which this information was published."

Answer: Recent refrigeration municipal codes have been published in REFRIGERATION NEWS, as follows:

New York City code, Nov. 13, 1935.

New York City Revisions, March 25, and April 8, 1936.

Chicago code, April, 1936.

Detroit License ordinance, April 29, 1936.

Seattle, Wash. code (rejected), Sept. 23, 1936.

### Gem Ice Boxes

No. 3032 (Exporters, New York)—"We have an inquiry from one of our accounts for Gem Ice Boxes."

"Would you be so kind as to inform who makes this brand of ice box."

Answer: We suggest that you write to the National Refrigerator Manufacturers Association, 205 W. Wacker Drive, Chicago, Ill.

### Nema Florida Sales

No. 3033 (Distributor, Florida)—"We are anxious to immediately secure a complete record of total Nema refrigerator shipments to Florida during 1936."

"We believe that you have this information on file for the first ten months of last year and would appreciate your forwarding it to us by return mail."

Answer: Total shipments of electric refrigerators to Florida by Nema companies for 1936 were 28,341.

### Cabinet Manufacturers

No. 3034 (Manufacturer, Cleveland)—"Will you please supply to me the names of manufacturers of refrigerator cabinets?"

"We require someone who has a volume production and at a price—the closer to Cleveland the better."

Answer: Following companies are manufacturers of refrigerator cabinets:

Erie Art Metal Co.  
18th and Schaal Ave., Erie, Pa.

Heinz & Munschauer  
20 Superior St., Buffalo, N. Y.

Jewett Refrigerator Co.  
2 Letchworth St., Buffalo, N. Y.

Midwest Stamping & Enameling Co.  
Galesburg, Ill.

Modern Refrigerator Co., Inc.  
494 Dumont Ave., Brooklyn, N. Y.

Sanitary Refrigerator Co.  
Fond du Lac, Wis.

Seeger Refrigerator Co.  
Arcade Wells & Whitehall Sts.  
St. Paul, Minn.

Truscon Steel Co.  
Pressed Steel Div., Cleveland, Ohio.

### Electric Kitchens

No. 3035 (Dealer, New Jersey)—"Kindly advise me what concerns make complete electric kitchens."

Answer: Electric Invisible Kitchen Co. of Chicago manufactures a one-piece kitchen for apartments and hotel suites.

### Saturation Figures

No. 3036 (Distributor, Louisiana)—"Please advise, if it is possible for you to do so, the national saturation percentage figure, including 1936 sales, on domestic household refrigerators."

Answer: Figures on 1936 refrigeration sales, as well as figures for the preceding three years, and the market saturation figure, were published on page 1 of the Jan. 6 issue of AIR CONDITIONING AND REFRIGERATION NEWS. The saturation is now 41.4%.

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with motor ..... 29.50

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(Johnson)

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with motor ..... 26.00

1/4 H. P. Twin cylinder less motor...\$20.50

with motor ..... 27.50

#### WAGNER

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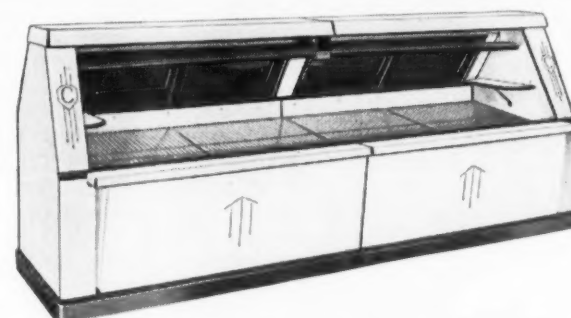
Capacitor Model-R. B. Z. R.

BRAND NEW \$6.75

Air cooled condensers suitable for units up to 1/4 H. P.

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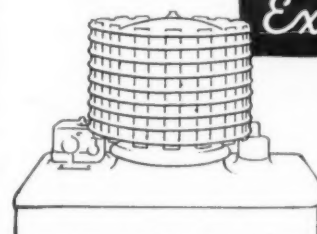
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MAJESTIC HERMETIC UNITS—\$20.50

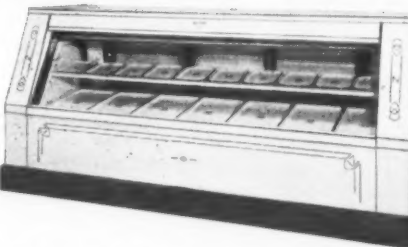
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W.W. GRAINGER INC. GRAINGER BLDG. 825 CONGRESS ST. CHICAGO



## Elliott Harrington, in Oil Burner Show Talk, Emphasizes Air Purification

(Concluded from Page 1, Column 1)  
spray for "process" work, or for prevention of over-cooling during mild but humid weather, when considerable humidification but little cooling is required.

The Herman-Nelson unit cools and dehumidifies in the conventional manner by Freon direct-expansion coils located in either horizontal overhead equipment, or in floor-type room coolers.

While the General Electric Co. exhibited none of their cooling equipment, they carry a complete line as is well known.

In the oil burner exhibits, may be seen "gun" type, "rotary," and "pot" type equipment, with the gun type far in the lead, as would be expected considering the latest trends.

Practically all of the oil burner manufacturers make "direct fired" equipment, while many of them manufacture "boiler-burner" units also.

### HARRINGTON'S ADDRESS

Worrying about how to protect the air-conditioned human being of tomorrow, whose immunity to disease might theoretically fail to develop for lack of practice, was described as just so much lost motion by Elliott Harrington, General Electric air-conditioning engineer, one of the speakers at the opening session of the Institute.

With present types of building construction and air-conditioning technique, it would be impossible, Mr. Harrington said, to produce air so sterile that it could have any effect on the race over a period of years.

"Some of you might feel," the speaker said, "that by air conditioning the spaces in which we live and work, we are likely to produce a new type of human being, who lives in a state of good health while in air-conditioned spaces, but develops no immunity to concentrations of bacteria which he might contact in spaces not air conditioned."

"In this connection, there is a classic medical experiment in which a litter of rabbits was separated into two groups. One group was brought up under perfect conditions, with sterile air and sterile food; the other group was allowed to run the fields as normal rabbits would."

"The rabbits living under the sterile conditions grew a little larger, and their coats were a little softer, than those of the rabbits who had to shift for themselves, but when the pampered ones were let out and allowed to run the fields, they died because they had developed no immunity to ordinary conditions."

"Fortunately, it would be impossible in present types of building construction for us as air-conditioning engineers to produce those absolutely sterile conditions, because in any enclosure there is a complete replacement of the inside air by outside air about once per hour, bringing in a new charge of dust and bacteria."

"We do not produce sterile air; we simply avoid concentrations of bacteria which the normal body cannot fight off. The normal body is entirely able to take care of itself under average bacteria distribution. The medical profession tells us that it is the bacteria concentrations that cause trouble."

### IDEAL ATMOSPHERE

Defining the air-conditioning engineer's ideal as "the atmosphere . . . existing on a spring morning in the open country, preferably just after rain," Mr. Harrington went on to say that, "by controlling the four factors of temperature, humidity, circulation, and purity of air, we are able to reproduce quite closely the spring morning conditions within the home, office, or shop—leaving out, of course, such psychological factors as birds in the trees and moist, springy sod under foot."

Turning to winter air conditioning, Mr. Harrington said that three of its important benefits relate to comfort, control of body temperature, and health.

Least understood but probably most important element of air conditioning is air purification, Mr. Harrington declared, which involves the substantial elimination of odors, dust, and bacteria.

### ODOR CONTROL

"At the present time," he said, "the air-conditioning industry has not produced an entirely successful odor filter. Therefore, odors are controlled by bringing in sufficient outside air to dilute the odors to the point where they are not noticeable, and herein lies the only really necessary use of outside air in air conditioning. Bad odors in themselves are harmless, but they are psychologically bad."

"The elimination of dust is an art quite well understood. It is accomplished by the use of various forms of static filters or by washing. Ordinary distribution of dust does not adversely effect the body because nature has provided a mechanism for removing it as it accumulates in the respiratory system. However, concentrations of dust overload this mechanism and therefore are harmful."

### REMOVING BACTERIA

"The most interesting and undoubtedly the most important part of air cleaning has to do with the removal of bacteria. The medical profession tells us that dust is a germ carrier, that dust free air is substantially sterile air, and that most bacteria cannot live without the presence of dust in various forms."

"It is a relatively simple matter for a good air-conditioning system to remove 90% to 95% of the dust from the air passing through it, as determined by a definite A.S.H.V.E. Test Standard. It has been shown that such dust removal also reduces the bacteria count of the air by about the same percentage. As a result, the tendency to contract the various air borne diseases is greatly reduced."

### EFFECT OF DRY AIR

"Dr. Irving S. Cutter, dean of the Northwestern University medical school, recently was reported as follows: 'Dry, hot air such as is found in most homes and offices in winter, destroys the resistance of the mucous membrane in the nose and throat. Any infection that is going about, such as colds and influenza, always attacks that membrane. When the air is too dry, tiny cracks appear in the membrane, which give bacteria an opportunity to enter and lodge there.'

"Dr. Cutter goes on to state that 'In addition to the very beneficial moisture added, air conditioning also filters the air of bacteria carrying dust. In hot and dry homes and offices, germs expelled from the body by sneezes and coughs, settle to the floor and are easily stirred up and breathed by other occupants of the room.'

It has been estimated that after city air—which frequently contains more than 50,000 particles of dust to the cubic foot—has been properly air conditioned it contains less than 5,000 particles per cubic foot. This also reduces by about 90% the bacteria count of the air."

"Recently we did some dust counting on board the 'Queen of Bermuda' at sea, and also on the island of Bermuda. The data obtained indicates that the air in these localities is substantially free from dust as compared to the air in our larger cities, such as New York or Philadelphia. This data also shows that the air in Bermuda is of about the same dust count as that in a well air-conditioned city home."

"A series of interesting medical experiments were recently conducted at the University of California, wherein persons unusually susceptible to colds lived for periods of time in a well air-conditioned room with other persons suffering from severe colds. As long as proper air conditions were maintained, the healthy persons failed to contract any form of cold or influenza from the unhealthy ones."

"Ionization has been mentioned as an element which provides a certain stimulating quality of outdoor air," Mr. Harrington said. "A great deal of study has been given to this subject, and the work is still going on. It is my opinion that further identification is necessary, and that as yet ionization is not a part of air conditioning."

### USE OF OZONE

"The use of ozone has long been recognized as an agent for the destruction of bacteria, and it is particularly useful in the purification of water. Our own experience has been that any concentration of ozone adequate to destroy bacteria in the air produces an odor problem which is quite insurmountable."

"A great deal of attention at the moment is being given to the destruction of bacteria in the air by the use of ultra-violet light, particularly in hospitals where sterile conditions are required. Research work on this subject is well under way, but again in my opinion, further identification is needed."

The list of exhibitors and their key men is as follows:

Anchor Post Fence Co.—T. H. Smoot, F. P. Harbin; Auto-Heat Corp.—O. B. Moody, G. W. Latham, Harry Bergere, William Reeve, William Kenyon, W. B. Chesbrough, Sol Weithorn; American Ra-

diator Co.—Mr. Ries, Mr. Varble, R. H. Chaffee.

Automatic Products Co.—R. W. Johnson, E. A. Vallee; Bell & Gossett Co.—C. E. Pullum, R. E. Moore; Bethlehem Foundry & Machine Co.—C. S. Dieter, J. B. White, F. H. Tomlinson; Burnham Boiler Corp.—A. E. Bastedo, A. P. Weiss, J. Balter, C. E. Dodds, G. F. Bacon, C. W. Lowrey, H. A. Schnitzer, A. H. MacDade, F. Crawford.

Carter-Korth Oil Burner Corp.—Arnold Eckhart; Century Engineering Corp.—J. A. Lattner, M. D. McWilliams; Cleveland Steel Products Corp.—W. J. Smith, G. Rakovan, D. W. Rouse, J. A. Lappin, J. F. Donnelly, L. F. Pratt, J. L. O'Brien.

Detroit Lubricator Co.—P. S. Russell; E. I. Du Pont de Nemours Co.—H. J. Jordan, V. A. Cosler, H. L. Lawrence; Electrol, Inc.—M. J. Hammers, L. L. Jacobs; Fitzgibbons Boiler Co., Inc.—P. K. Addams, K. L. Mytinger, E. N. Black, A. W. Wilson.

Gar Wood Industries, Inc.—F. H. Dewey, D. J. Luty, Gilbert Gadoye, George Hewitt, Edward Wood, Stanley E. Chase; General Electric Co.—(Schenectady) J. W. Sholder; (Bloomfield, N. J.) Glenn Gudell, W. A. Scherff; General Fittings Co.—C. R. Bernstrom, H. H. Erickson, C. J. Arthur.

Harvey-Whipple, Inc.—W. O. Harvey, G. H. Bork, F. A. Moran, R. S. Rennicks, T. J. Hodgdon; Heil Co.—C. B. Tamm, George Hockstein; Hotstream Heater Co.—G. B. Gebbert, L. R. Mendelson, O. A. Heiter; Jefferson Electric Co.—C. T. Harnett, J. M. Bennan, E. B. Charlton.

S. T. Johnson Co.—J. C. Johnson, R. P. Johnson, L. W. Kline; The Kent Co., Inc.—C. E. Clifford, R. H. Boyer, E. P. Wittschie, A. D. Hull, R. Bauchmoyer, P. R. Young; Edward Pace, Horace Beal; Keewanee Boiler Corp.—B. H. Schultze, L. W. Charlet, Arthur Hare; Lynn Products Co.—F. H. Van Blarcom, J. F. McGowan, A. M. Parvin, Ralph Dennis, Richard Hurd, Howard Jacobson.

McDonnell & Miller—E. N. McDonnell, Merrill F. Blankin, Bruce Adams; May Oil Burner Corp.—Edward E. Yaggy, A. Klotzman, P. H. Jacobson, R. Wyer, J. O. Miller, Mr. Huff, Mr. Shire; Meyer Furnace Co.—F. E. Mehrings, F. L. Meyer.

Minneapolis-Honeywell Regulator Co.—H. W. Sweat, C. B. Sweat, W. L. Huff, J. W. Pauling, G. D. Kingsland, A. H. Lockrae, Carl E. Swanson; National Airoil Burner Co.—W. A. Horko, J. A. Gerety, R. E. Hulmes; Natl. Radiator Corp.—

A. A. Ahliff, Frank Eisinger, C. P. Culbert, E. L. Redden; Nu-Way Corp., C. N. Lockwood.

Penn Electric Switch Co.—Nelson B. Delavan, B. L. Boalt; Perfex Controls Co.—Julius K. Luthé, F. D. Hansen, Shepard Barnes, H. L. Lindemann, L. L. Cunningham, W. R. Miller, Allen Butler, C. B. Soper, C. E. Hayes, Jack Jones; Petroleum Heat & Power Co.—Howard W. Dexter; Preferred Utilities—G. P. Gregory, R. S. Bohn, W. H. Matthews.

Reif Rexoll—A. F. Reif, C. A. Reif, A. A. Tomlinson, C. B. Coleman, M. A. Gimbrone; Rochester Mfg. Co., Inc.—L. I. Hall, C. L. Hastings; Shell Union Oil Corp.—E. E. Overton, R. T. Goodwin, E. B. Glendenning, E. A. Lindsay; Spencer Heater Division—J. M. Kipe, J. C. Ickeringill, J. G. Howley, W. I. Higgins, J. E. Axeman; Sundstrand Machine Tool Co.—C. H. Rystrom, Howard Ekstrom, W. R. Keefer; Synco-Flame Burner Corp.—E. A. Teplow, R. S. Baker, A. L. Martel, A. J. Gilbert.

Taco Heaters—J. R. Murphy, R. L. Blanding; Timken Silent Automatic—W. F. Rockwell, R. J. Goldie, T. A. Crawford, M. A. Powers, J. A. Wilson, E. H. Haugen, T. D. McCarthy, F. E. Purcell, A. L. Addis, M. F. Cosgrove, L. N. Zimmerman, M. B. Ellis, W. J. Chappell.

H. A. Thrush & Co.—L. H. Dietz, J. S. Blakemore, H. E. Thompson, C. W. Norby, R. E. Clegg, E. E. Adams, W. D. Carter; Titusville Iron Works Co.—F. L. Burns, R. J. Reed, M. A. Cordner, L. K. Hillman; Torrington Mfg. Co.—H. M. Risedorf, A. M. Hennequin, N. Doyle, A. J. Reed.

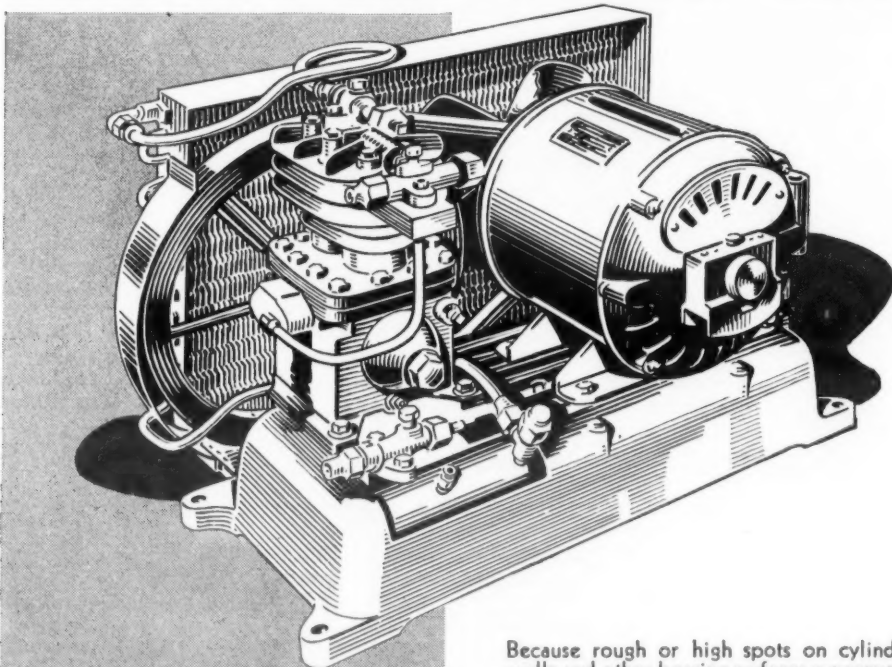
Tuthill Pump Co.—H. E. Kempton, W. J. Wagner, W. W. Paget; U. S. Radiator Corp.—D. E. Welsh, E. S. White, R. P. Henderson, J. F. McIntire; Utica Radiator Corp.—E. S. Lea, Minor Hughes, G. von Seebeck, Carl Reimers, T. M. Bray, K. J. Walters, C. A. Sawade, S. W. Shermet.

Viking Pump Co.—C. D. Sadler; Waterfilm Boilers—A. R. Hanson, J. L. Lehman; Wayne Oil Burner—C. G. Cleaver, E. H. Berghoff, A. C. Bennington; Webster Electric Co.—H. C. Osborne, A. C. Kleckner, V. D. Ott, D. R. Parker, B. T. Wiechers.

Well-McLain Co.—T. D. Casserly; York Oil Burner Co., Inc.—S. L. Ochoa, A. E. Blood, R. H. Pentz, R. C. Hoffman, A. M. Raver, Stanton Fitzgerald, Elmer Francoeur, Stanley Wojick, D. H. Teter, Fred White.

Kelvinator (not an exhibitor)—Ed Heitman, Al Knoph, F. Valtier, R. W. Doeg.

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1/2 h.p. Air-Cooled Unit . . .  
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Because rough or high spots on cylinder walls and other bearing surfaces are responsible for knocks in a compressor, we take no chances. We "remove the knocks" before we ship the compressor.

After all parts are carefully inspected and fitted—the compressor is run in under power for 24 hours, with a special lapping compound. This insures perfect fit with just sufficient clearance for proper lubrication and effecting an absolute oil seal.

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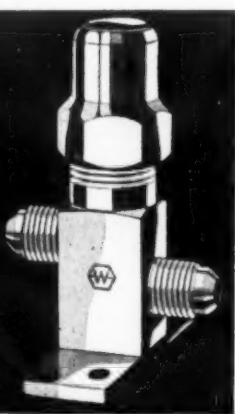
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VOL. 20, No. 11, SERIAL No. 417  
ISSUED EVERY WEDNESDAY

DETROIT, MICHIGAN, MARCH 17, 1937

IN TWO PARTS, PART TWO  
TWENTY CENTS PER COPY

## SPECIFICATIONS

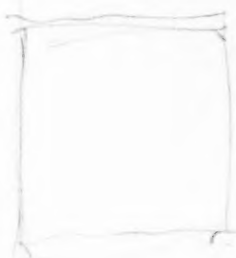
## OF 243 MODELS

## OF 29 MAKES

### Of Household Electric

### Refrigerators in

### this Section





## Specifications and Price Information for 1937 Electric Refrigerator Models

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In this section (Part 2 of the March 17 issue of AIR CONDITIONING AND REFRIGERATION NEWS) will be found specifications data and price information on 29 leading makes of 1937-model household electric refrigerators.

For the past five years the NEWS has been gathering specifications of household electric refrigerators by means of questionnaires sent directly to each manufacturer. The data published in this issue was compiled under somewhat different circumstances.

Members of the Household Section of the Refrigeration Division of National Electrical Manufacturers Association (Nema) decided last fall to collect and publish in pamphlet form specifications of their 1937 refrigerators, and refrigerators which they manufacture for other merchandising organizations. The 16-page pamphlets published by the Nema organization have been distributed by the member companies to their dealers.

The Nema member manufacturers furthermore decided not to make public, officially at least, *any further specifications data other than that published in the pamphlet prepared under their auspices.*

For this reason AIR CONDITIONING AND REFRIGERATION NEWS, with the permission of the Refrigeration Division of Nema, is publishing the data which appeared in the Nema pamphlet, plus data on the refrigerators made by 13 other manufacturers not members of the Association, which data was collected by the editorial staff of the NEWS. There is some difference in the type and form of material in these two compilations.

In the opinion of AIR CONDITIONING AND REFRIGERATION NEWS the specifications decided upon by the Nema members leave something to be desired, since the data does not provide information on such important factors as refrigerating capacity of the unit, controls, thickness of insulation, and accessories (convenience features) which are standard in the various models.

With respect to the rated capacity of the units, there has never been any approved method of rating household refrigerating systems, and it is to be hoped that the long-delayed code for rating and testing household electric refrigerators, which Nema and the American Society of Refrigerating Engineers have been working on, will be approved in the near future.

Concerning controls, thickness of insulation, and convenience features, it is probable that the NEWS will make a comparative analysis of these factors for the various makes in a future issue. The price information published in this issue was collected by the NEWS, and the conditions under which the prices apply are noted in each case.



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Specifications for the manufacturers listed in this group were compiled by the Household Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association (Nema) and are reprinted with the permission of the Nema division.

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# COLDSPOT

Name of Manufacturer ..... Sunbeam Electric Mfg. Co., Evansville, Ind.  
(Cabinets: Sunbeam and Seeger)

Model No. ....	A7-704	C7-736	D7-716	D7-726	E7-718	E7-728
Exterior Cabinet Finish .....	Dulux	.....	.....	Porcelain	Dulux	Porcelain
Retail Installed Price .....	.....	.....	.....	.....	.....	.....

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) .....	4.22	6.22	6.22	6.22	8.59	8.59
Total Shelf Area (Sq. Ft.) .....	9.25	12.30	12.30	12.30	17.37	17.37

## CABINET

Interior Finish .....	.....	.....	.....	Porcelain	.....	.....
Overall Height (Inches) .....	50 3/16	59 1/16	59 1/16	59 1/16	64 3/16	64 3/16
Overall Width (Inches) .....	23 3/4	30	30	30	33 3/4	33 3/4
Overall Depth (Inches) .....	25 1/4	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2
Inside Height (Inches) .....	27 1/4	31 1/16	31 1/16	31 1/16	37 1/4	37 1/4
Inside Width (Inches) .....	19 1/2	23 3/4	23 3/4	23 3/4	27 1/4	27 1/4
Inside Depth (Inches) .....	15 3/16	15 1/16	15 1/16	15 1/16	15 1/16	15 1/16
Number of Doors .....	1	1	1	1	1	1

Insulation .....  
Cellufoam or  
Balsam Wool

## ICE TRAYS

Total Number of Trays .....	2	5	5	5	5	5
Total Weight of Ice (Lbs.) .....	5	8	9	9	11	11
Total Number of Cubes .....	64	105	113	113	132	132
Number of Trays/Lbs. Each .....	2-2 1/2	3-1	2-1	2-1	2-1	2-1
Material of Above .....	.....	.....	Aluminum	Aluminum	Aluminum	Aluminum
Number of Trays/Lbs. Each .....	.....	1-2	1-1 1/2	1-1 1/2	1-2	1-2
Material of Above .....	.....	.....	Aluminum	Aluminum	Aluminum	Aluminum
Number of Trays/Lbs. Each .....	.....	1-3	1-4	1-4	1-5 1/2	1-5 1/2
Material of Above .....	.....	.....	Aluminum	Aluminum	Aluminum	Aluminum
Number of Trays/Lbs. Each .....	.....	.....	1-1 1/2	1-1 1/2	1-1 1/2	1-1 1/2
Material of Above .....	.....	.....	Aluminum	Aluminum	Aluminum	Aluminum
Number of Special Trays .....	.....	.....	1	1	1	1

## COMPRESSOR

Location .....	.....	.....	.....	Above	.....	.....
Open or Sealed .....	.....	.....	.....	Open	.....	.....
Reciprocating or Rotary .....	.....	.....	.....	Rotary	.....	.....
Refrigerant Used .....	.....	.....	.....	Sulphur Dioxide	.....	.....

## CONDENSER

Type .....	.....	.....	.....	Tube and Fin	.....	.....
How Cooled .....	.....	.....	.....	Fan	.....	.....

## WEIGHT

### (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) .....	233	348	374	395	409	441
Shipping Weight (Lbs.) .....	303	428	453	474	500	524

## GUARANTEE

Guarantee on Cabinet, Shelves, Trays, Accessories .....	.....	.....	.....	.....	.....	.....
Guarantee on Refrigeration System Only .....	.....	.....	.....	.....	.....	.....
Guarantee on Controls .....	.....	.....	.....	.....	.....	.....

1 Year  
5-Year Protection Plan  
1 Year







# FAIRBANKS-MORSE

Name of Manufacturer ..... Fairbanks, Morse & Co., Home Appliance Div., Indianapolis, Indiana

Model No. ....  
 Exterior Cabinet Finish .....  
 Retail Installed Price ..... Dulux

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) .....  
 Total Shelf Area (Sq. Ft.) .....

## CABINET

Interior Finish ..... Porcelain  
 Overall Height (Inches) ..... 51 1/2  
 Overall Width (Inches) ..... 23 3/4  
 Overall Depth (Inches) ..... 23 3/4  
 Inside Height (Inches) ..... 24 1/2  
 Inside Width (Inches) ..... 18 3/4  
 Inside Depth (Inches) ..... 17 1/2  
 Number of Doors ..... 1  
 Insulation ..... Balsam Wool

## ICE TRAYS

Total Number of Trays .....  
 Total Weight of Ice (Lbs.) .....  
 Total Number of Cubes .....  
 Number of Trays/Lbs. Each .....  
 Material of Above .....  
 Number of Special Trays .....

## COMPRESSOR

Location ..... Below  
 Open or Sealed ..... Open  
 Reciprocating or Rotary ..... Reciprocating  
 Refrigerant Used ..... Sulphur Dioxide

## CONDENSER

Type .....  
 How Cooled ..... Fanned Fan

## WEIGHT (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) .....  
 Shipping Weight (Lbs.) .....

## GUARANTEE

Guarantee on Cabinet, Shelves, Trays and Accessories ..... 1 Year  
 Guarantee on Refrigeration System Only ..... 1 Year, 4 Additional Years Optional  
 Guarantee on Controls ..... Temperature Control 1 Year



## FRIGIDAIRE

Name of Manufacturer .....Frigidaire Division, General Motors Corporation, Dayton, Ohio

Model No.	Special			Master			De Luxe			Imperial		
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37	8-37
Exterior Cabinet Finish	D3-37											
Retail Installed Price												

Porcelain

## CAPACITY (Nema Rating)

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Net Food Storage (Cu. Ft.)	5.1	6.2	7.2	4.1	5.1	6.2	7.2	8.25	5.1	6.2	7.2
Total Shelf Area (Sq. Ft.)	10.7	13.6	15.6	8.9	10.7	14.0	15.8	19.3	10.7	14.0	15.8

## CABINET

	Special			Master			De Luxe			Imperial		
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37	
Interior Finish												
Overall Height (Inches)	44 $\frac{1}{2}$	56 $\frac{1}{2}$	57 $\frac{1}{2}$	50 $\frac{1}{2}$	54 $\frac{1}{2}$	58 $\frac{1}{2}$	59 $\frac{1}{2}$	60 $\frac{1}{2}$	54 $\frac{1}{2}$	58 $\frac{1}{2}$	59 $\frac{1}{2}$	
Overall Width (Inches)	22 $\frac{3}{4}$	30 $\frac{1}{2}$	31 $\frac{1}{2}$	24 $\frac{3}{4}$	28 $\frac{1}{2}$	29 $\frac{1}{2}$	31 $\frac{1}{2}$	32 $\frac{1}{2}$	28 $\frac{1}{2}$	29 $\frac{1}{2}$	31 $\frac{1}{2}$	
Overall Depth (Inches)	23 $\frac{3}{4}$	24 $\frac{3}{4}$	25 $\frac{1}{2}$	27 $\frac{1}{2}$	29 $\frac{1}{2}$	33 $\frac{1}{2}$	34 $\frac{3}{4}$	35 $\frac{1}{2}$	29 $\frac{1}{2}$	33 $\frac{1}{2}$	34 $\frac{3}{4}$	
Inside Height (Inches)	17 $\frac{3}{4}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	19 $\frac{3}{4}$	22 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	26 $\frac{1}{2}$	22 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	
Inside Width (Inches)	13 $\frac{3}{4}$	14 $\frac{1}{2}$	15 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	15 $\frac{1}{2}$	17 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	15 $\frac{1}{2}$	
Number of Doors	1	1	1	1	1	1	1	1	1	1	1	
Insulation												

Special Frigidaire

## ICE TRAYS

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Total Number of Trays	2	4	6	3	4	6	6	6	4	6	6
Total Weight of Ice (Lbs.)	4.0	8.0	10.0	6.0	8.0	10.0	12.0	14.0	8.0	10.0	12.0
Total Number of Cubes	32	64	84	48	64	84	84	108	64	84	108
Number of Trays/Lbs. Each	2-2.0	4-2.0	6-1.66	3-2.0	4-2.0	6-1.66	6-2.0	6-2.38	4-2.0	6-1.66	6-2.38
Material of Above											
Number of Special Trays	2	4	6	3	4	6	6	6	4	6	6

## COMPRESSOR

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Location											
Open or Sealed											
Reciprocating or Rotary											
Refrigerant Used											

## CONDENSER

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Type											
How Cooled											

## WEIGHT

## (COMPLETE REFRIGERATOR)

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Net Weight (Lbs.)	171	263	310	226	260	299	340	398	297	330	360
Shipping Weight (Lbs.)	205	355	389	302	341	382	459	516	408	451	508

## GUARANTEE

	Special	Special	Special	Master	Master	Master	De Luxe	De Luxe	De Luxe	De Luxe	Imperial
	5-37	6-37	7-37	4-37	5-37	6-37	7-37	8-37	5-37	6-37	7-37
Guarantee on Cabinet, Shelves, Trays											
Guarantee on Refrigeration System Only											
Guarantee on Controls											

1 Year Warranty

5 Year Protection Plan

1 Year Warranty



# GENERAL ELECTRIC

Name of Manufacturer ..... General Electric Co., Cleveland, Ohio.

Model No. .... LK-2 B3-37 B4-37 B5-37 B6-37 B7-37 B8-37 JB5-37 JB6-37 JB7-37 M6-37 M8-37 PB6-37 PB8-37 K-12 K-15

Exterior Cabinet Finish ..... Glyptal ..... Porcelain .....

Retail Installed Price ..... .....

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) ..... 2.0 2.8 4.2 5.2 6.1 7.1 8.1 5.2 6.1 7.1 6.2 8.2 6.1 8.1 12.5 15.4  
Total Shelf Area (Sq. Ft.) ..... 5.2 8.4 10.9 12.2 15.1 16.9 10.9 12.2 15.1 16.9 12.2 16.9 12.2 16.9 22.7 31.3

## CABINET

Interior Finish ..... Porcelain ..... Thermocraft .....  
Overall Height (Inches) ..... 36 36 49 53 56 60 60 53 56 60 60 66 69 56 62 62  
Overall Width (Inches) ..... 21 23 23 27 27 29 29 27 29 29 29 32 32 29 32 32  
Overall Depth (Inches) ..... 23 23 25 26 26 27 27 26 27 27 27 32 32 27 32 32  
Inside Height (Inches) ..... 13 13 17 18 21 21 21 21 21 21 21 23 23 23 23 23  
Inside Width (Inches) ..... 16 16 20 21 23 23 23 23 23 23 23 26 26 26 26 26  
Inside Depth (Inches) ..... 16 16 15 15 15 15 15 15 15 15 15 16 16 16 16 16  
Number of Doors ..... 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  
Insulation ..... .....

## ICE TRAYS

Total Number of Trays ..... 2 2 2 3 4 4 4 2 4 4 4 4 4 4 4 4  
Total Weight of Ice (Lbs.) ..... 2 2 4 6 8 11 11 6 8 8 8 11 11 8 11 11  
Total Number of Cubes ..... 20 40 40 60 84 84 84 40 80 80 80 84 84 84 84 84  
Number of Trays/Lbs. Each ..... 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-3 2-3 2-3 2-3 2-2 2-2 2-2 2-2 2-3  
Material of Above ..... Aluminum .....  
Number of Trays/Lbs. Each ..... ..  
Material of Above ..... Aluminum with Rubber Divider ..... Alum. .....  
Number of Trays/Lbs. Each ..... ..  
Material of Above ..... All Rubber .....  
Number of Special Trays ..... ..

## COMPRESSOR

Location ..... Below ..... Above ..... Below .....  
Open or Sealed ..... Sealed .....  
Reciprocating or Rotary ..... Reciprocating .....  
Refrigerant Used ..... Sulphur Dioxide .....

## CONDENSER

Type ..... Plate Type ..... Finned Tube .....  
How Cooled ..... Natural Draft ..... Natural Draft ..... Fan .....

## WEIGHT (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) ..... 130 205 210 272 310 345 364 245 300 347 175\* 175\* 315 370 660 760  
Shipping Weight (Lbs.) ..... 160 250 266 325 383 448 470 320 380 435 265\*\* 340\*\* 390 480 762 862

## GUARANTEE

Guarantee on Cabinet, Shelves, Trays, Accessories. .... One Year  
Guarantee on Refrigeration System Only. .... One Year  
Guarantee on Controls ..... One Year

(\*) Crated weight of unit only. (\*\*) Crated weight of cabinet and accessories.



## GIBSON

Name of Manufacturer ..... Gibson Electric Refrigerator Corporation, Greenville, Michigan													
Model No. ....	S-47	S-57	S-67	S-77	S-667	CB587	CB697	CB797	CB867	PCB587	PCB697	PCB797	PCB867
Exterior Cabinet Finish .....	Lacquer .....												
Retail Installed Price .....	.....												
CAPACITY (Nema Rating)													
Net Food Storage (Cu. Ft.) .....	4.00	5.00	6.00	7.00	6.00	5.00	6.00	7.00	7.75	5.00	6.00	7.00	7.75
Total Shelf Area (Sq. Ft.) .....	7.5	10.2	11.2	14.4	11.05	9.5	13.35	14.3	15.1	9.5	13.35	14.3	15.1
CABINET													
Interior Finish .....	Porcelain												
Overall Height (Inches) .....	50 1/4	53 3/4	57 1/2	61	55 3/4	53 3/4	57 1/2	61	61	53 3/4	57 1/2	61	61
Overall Width (Inches) .....	24	28 3/4	30	30 1/2	28 5/8	28 3/4	30	30 1/2	30 1/2	28 3/4	30	30 1/2	30 1/2
Overall Depth (Inches) .....	21 1/4	24 1/2	26	26 1/2	26	24 1/2	26	26 1/2	26 1/2	24 1/2	26	26 1/2	26 1/2
Inside Height (Inches) .....	26 1/2	29	31 1/2	34 3/4	29 7/8	29	31 3/4	34 3/4	34 3/4	29	31 3/4	34 3/4	34 3/4
Inside Width (Inches) .....	19 3/4	23	23 3/4	23 3/4	23 3/4	23	23 3/4	23 3/4	27	23	23 3/4	23 3/4	27
Inside Depth (Inches) .....	14 3/4	15 1/4	16 1/4	16 1/4	16 1/4	15 1/4	16 1/4	16 1/4	16 1/4	15 1/4	16 1/4	16 1/4	16 1/4
Number of Doors .....	1	1	1	1	1	1	1	1	1	1	1	1	1
Insulation .....	Balsam Wool												
ICE TRAYS													
Total Number of Trays .....	2	4	5	5	3	4	5	5	5	4	5	5	5
Total Weight of Ice (Lbs.) .....	3	6.5	11	12	9	6.5	11	12	12	6.5	11	12	12
Total Number of Cubes .....	42	77	104	104	108	77	104	104	104	77	104	104	104
Number of Trays/Lbs. Each .....	2-1 1/2	3-1 1/2	4-2	3-2	3-3	3-1 1/2	4-2	3-2	3-2	3-1 1/2	4-2	3-2	3-2
Material of Above .....	Aluminum												
Number of Trays/Lbs. Each .....	....	1-2	1-3	2-3	....	1-3	1-3	2-3	2-3	1-2	1-3	2-3	2-3
Material of Above .....	Aluminum												
Number of Special Trays .....	....	1	1	1	....	1	1	1	1	1	1	1	1
COMPRESSOR													
Location .....	Below												
Open or Sealed .....	Sealed												
Reciprocating or Rotary .....	Reciprocating												
Refrigerant Used .....	Sulphur Dioxide												
CONDENSER													
Type .....	Finned Coil												
How Cooled .....	Forced Draft												
WEIGHT													
(COMPLETE REFRIGERATOR)													
Net Weight (Lbs.) .....	233	284	317	336	310	302	336	348	384	319	353	372	408
Shipping Weight (Lbs.) .....	275	336	370	391	354	353	390	409	443	377	416	440	470
GUARANTEE													
Guarantee on Cabinet, Shelves, Trays and Accessories .....	1 Year												
Guarantee on Refrigeration System Only .....	1 Year with Four Year Motor-Compressor Contract												
Guarantee on Controls .....	1 Year												



# KELVINATOR

Name of Manufacturer ..... Kelvinator Division, Nash-Kelvinator Corp., Detroit, Mich.

Model No. .... KS50 KS60 KS70 K3-37 K4-37 K5-37 K6-37 K7-37 PK5-37 PK6-37 PK7-37 PK9-37 SD7-37 SD9-37 SD13-37 SD17-37

Exterior Cabinet Finish ..... Permalux ..... Porcelain

Retail Installed Price ..... ..

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) ..... 5.16 6.13 7.19 3.16 4.15 5.16 6.13 7.16 5.16 6.13 7.19 9.20 7.04 9.20 13.12 16.79

Total Shelf Area (Sq. Ft.) ..... 10.72 14.03 15.49 7.45 9.61 10.72 14.03 15.49 10.72 14.03 15.49 18.22 13.80 18.51 25.92 31.86

## CABINET

	Porcelain											
Interior Finish .....	58	60	63 1/4	48	51 3/16	58 3/4	60 1/16	64 7/32	58 3/4	61 1/16	64 1/16	66 1/16
Overall Height (Inches) .....	29 1/4	31 7/16	32 7/16	24	24	29 7/16	32 1/16	33 1/2	29 7/16	32 1/16	33 1/2	34 1/2
Overall Width (Inches) .....	23 1/4	23 1/16	23 1/16	24 3/16	25 1/16	24 3/16	24 3/16	24 3/16	23 1/16	23 1/16	23 1/16	28 3/16
Overall Depth (Inches) .....	30 3/16	32 3/16	35 7/16	19 1/2	24 1/4	30 3/16	32 3/16	35 7/16	30 3/16	32 3/16	35 7/16	37 1/2
Inside Height (Inches) .....	22 1/4	24 7/16	25 3/4	18 7/16	18 7/16	22 1/4	24 7/16	25 3/4	22 1/4	24 7/16	25 3/4	26 3/4
Inside Width (Inches) .....	14 1/32	14 1/32	14 1/32	16 3/32	16 3/32	14 1/32	14 1/32	14 1/32	14 1/32	14 1/32	14 1/32	17 2/32
Inside Depth (Inches) .....	1	1	1	1	1	1	1	1	1	1	1	1
Number of Doors .....	1	1	1	1	1	1	1	1	1	1	1	1
Insulation .....	Kelvatex											

## ICE TRAYS

Total Number of Trays	4	4	6	2	2	4	4	4	6	4	4	6	5	6	10	12
Total Weight of Ice (Lbs.)	9	9	13.5	4	4.5	9	9	13.5	9	9	13.5	20	21	23 1/2	26	30 1/2
Total Number of Cubes	88	88	132	32	40	88	88	132	88	88	132	144	176	187	240	280
Number of Trays/Lbs. Each	4-2.25	4-2.25	6-2.25	2-2	2-2.25	4-2.25	4-2.25	6-2.25	4-2.25	4-2.25	6-2.25	1-6	2-6	2-6	2-4	2-4
Material of Above	Aluminum with Rubber Grids															
Number of Trays/Lbs. Each	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4-3 1/4	2-2 1/4	*	4-2 1/4	5-2 1/4
Material of Above	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of Trays/Lbs. Each	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Material of Above	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of Special Trays	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## COMPRESSOR

Location .....	Below
Open or Sealed .....	Open
Reciprocating or Rotary .....	Reciprocating
Refrigerant Used .....	Sulphur Dioxide

## CONDENSER

Type .....	Cellular
How Cooled .....	Air

## WEIGHT

### (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) .....	277	307	318	232	250	287	326	338	339	366	389	469	442	497	674	745
Shipping Weight (Lbs.) .....	350	386	400	281	307	360	405	420	420	455	490	600	524	628	887	986

## GUARANTEE

Guarantee on Cabinet, Shelves, Trays

and Accessories ..... 1 Year

Guarantee on Refrigeration

System Only ..... 1 Year-5 Year Service Plan

Guarantee on Controls ..... 1 Year

\*One tray, 2 1/4; one tray, 3 1/2.



# LEONARD

Name of Manufacturer ..... Leonard Refrigerator Co., Detroit, Mich.

Model No. .... LS 50 LS 60 LS 70 LS 37 L3-37 L4-37 L5-37 L6-37 L7-37 P5-37 P6-37 P7-37  
 Exterior Cabinet Finish ..... Permalain  
 Retail Installed Price ..... Permalain

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) ..... 5.16 6.13 7.19 3.16 4.15 5.16 6.13 7.19 5.16 6.13 7.19  
 Total Shelf Area (Sq. Ft.) ..... 10.72 14.03 15.49 7.45 9.61 10.72 14.03 15.49 10.72 14.03 15.49

## CABINET

Interior Finish ..... Porcelain  
 Overall Height (Inches) ..... 59 61 65 48 51 62 65 62 60 62 65  
 Overall Width (Inches) ..... 29 31 32 24 24 32 33 32 29 32 33  
 Overall Depth (Inches) ..... 24 24 24 25 25 25 25 25 25 25 25  
 Inside Height (Inches) ..... 30 32 35 19 24 32 35 32 30 32 35  
 Inside Width (Inches) ..... 22 24 25 18 24 24 25 24 22 24 25  
 Inside Depth (Inches) ..... 14 14 14 16 18 18 18 14 14 14 14  
 Number of Doors ..... 1 1 1 1 1 1 1 1 1 1 1  
 Insulation ..... Leonard Approved

## ICE TRAYS

Total Number of Trays ..... 4 4 6 2 2 4 6 4 4 4 6  
 Total Weight of Ice (Lbs.) ..... 9 9 13.5 4 4 9 13.5 9 9 9 13.5  
 Total Number of Cubes ..... 88 88 132 32 40 88 132 88 88 88 132  
 Number of Trays/Lbs. Each ..... 4-2.25 4-2.25 6-2.25 2-2.0 2-2.25 4-2.25 6-2.25 4-2.25 4-2.25 4-2.25 6-2.25  
 Material of Above ..... Aluminum with Rubber Grids  
 Number of Special Trays ..... ..

## COMPRESSOR

Location ..... Above  
 Open or Sealed ..... Open  
 Reciprocating or Rotary ..... Reciprocating  
 Refrigerant Used ..... Freon

## CONDENSER

Type ..... Cellular  
 How Cooled ..... Air

## WEIGHT (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) ..... 193 201 216 128 160 220 260 273 252 274 295  
 Shipping Weight (Lbs.) ..... 253 276 294 186 208 280 307 323 315 341 364

## GUARANTEE

Guarantee on Cabinet, Shelves, Trays and Accessories ..... One Year  
 Guarantee on Refrigeration System Only ..... One Year-Five Year Service Plan  
 Guarantee on Controls ..... One Year







# POTTER

Name of Manufacturer ..... Potter Refrigerator Corp., Buffalo, N. Y.

Model No.	Chilldare			Potter		
	C-47	C-67	L-67	L-87	D-107	D-137
Exterior Cabinet Finish					Dulux	
Retail Installed Price						
<b>CAPACITY (Nema Rating)</b>						
Net Food Storage (Cu. Ft.)	4.3	6.31				
Total Shelf Area (Sq. Ft.)	8.26	13.0	13.0	15.4	10.3	13.0
Frozen Storage Capacity (Bushels)					4/5	4/5
<b>CABINET</b>						
Interior Finish					Porcelain	
Overall Height (Inches)	53 3/16	58 3/4	58 3/4	67	57 3/4	63 1/4
Overall Width (Inches)	23 3/4	30 3/4	30 3/4	30 3/4	29 1/2	29 1/2
Overall Depth (Inches)	24 1/2	25 1/2	25 1/2	25 1/2	25 3/4	25 3/4
Inside Height (Inches)	26 3/4	29 7/16	29 7/16	37 3/4	37 3/4	37 3/4
Inside Width (Inches)	18 7/16	23 3/4	23 3/4	23 3/4	24	24
Inside Depth (Inches)	16 3/4	16 3/4	16 3/4	16 3/4	16 3/4	16 3/4
Number of Doors	1	1	1	1	1	1
Insulation						
<b>ICE TRAYS</b>						
Total Number of Trays	3	3	3	5	3	3
Total Weight of Ice (Lbs.)	3.3	6	6	10	6	6
Total Number of Cubes	54	84	84	140	84	84
Number of Trays/Lbs. Each	2-1.1	2-2.0	2-2.0	4-2.0	2-2.0	2-2.0
Material of Above				Aluminum		
Number of Trays/Lbs. Each	1-1.1	1-2.0	1-2.0	1-2.0	1-2.0	1-2.0
Material of Above				Aluminum with Rubber Grids		
Number of Special Trays						
<b>COMPRESSOR</b>						
Location					Below	
Open or Sealed					Open	
Reciprocating or Rotary					Reciprocating	
Refrigerant Used					Freon	
<b>CONDENSER</b>						
Type					Finned Tube	
How Cooled					Fan	
<b>WEIGHT (COMPLETE REFRIGERATOR)</b>						
Net Weight (Lbs.)						
Shipping Weight (Lbs.)	303	400	410	430	470	485
<b>GUARANTEE</b>						
Guarantee on Cabinet, Shelves, Trays and Accessories					One Year	
Guarantee on Refrigeration System Only					One Year	
Guarantee on Controls					One Year	



# STEWART-WARNER

Name of Manufacturer ..... Stewart-Warner Corporation, Chicago, Ill.

Model No. .... 457 557 657 667 767 867 567-P 667-P 767-P 867-P

Exterior Cabinet Finish ..... Lacquer ..... Porcelain

Retail Installed Price ..... 5.64 12.6 15.2 6.3 7.4 8.1 5.64 6.3 7.4 8.1

Net Food Storage (Cu. Ft.) ..... 4.5 5.64 6.3 6.3 7.4 8.1 5.64 6.3 7.4 8.1

Total Shelf Area (Sq. Ft.) ..... 10.2 12.6 15.2 15.2 15.9 17.1 12.6 15.2 15.9 17.1

## CAPACITY (Nema Rating)

Overall Height (Inches) ..... 51 1/16 55 3/16 58 7/16 62 5/8 65 1/2 65 1/2 58 7/16 62 5/8 65 1/2 65 1/2

Overall Width (Inches) ..... 23 3/4 28 3/4 28 3/4 31 1/4 31 1/4 31 1/4 28 3/4 31 1/4 31 1/4 31 1/4

Overall Depth (Inches) ..... 21 3/8 23 1/8 23 1/8 24 1/8 24 1/8 24 1/8 23 1/8 24 1/8 24 1/8 24 1/8

Inside Height (Inches) ..... 27 3/8 29 32 3/4 32 3/4 35 32 3/4 32 3/4 32 3/4 35 32 3/4 32 3/4

Inside Width (Inches) ..... 19 1/2 22 1/2 22 1/2 22 1/2 24 22 1/2 22 1/2 22 1/2 24 22 1/2 22 1/2 24

Inside Depth (Inches) ..... 16

Number of Doors ..... 1

Insulation ..... Porcelain ..... Balsam Wool

ICE TRAYS

Total Number of Trays ..... 2 4 4 3 3 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

Total Weight of Ice (Lbs.) ..... 4 8 8 8 8 12 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8

Total Number of Cubes ..... 56 96 96 93 93 141 93 93 93 93 93 93 93 93 93 93 93 93 93 93 93 93

Number of Trays/Lbs. Each ..... 2-2 4-2 4-2 1-2 1-2 3-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2 1-2

Material of Above ..... Aluminum ..... Rubber

Number of Trays/Lbs. Each ..... 1-4

Material of Above ..... Aluminum ..... Rubber

Number of Trays/Lbs. Each ..... 1-2

Material of Above ..... Aluminum ..... Rubber

Number of Special Trays ..... 1-4

COMPRESSOR

Location ..... Below ..... Open

Open or Sealed ..... Reciprocating or Rotary ..... Sulphur Dioxide

Refrigerant Used ..... Finned ..... Air (Fan)

CONDENSER

Type ..... How Cooled

WEIGHT (COMPLETE REFRIGERATOR)

Net Weight (Lbs.) ..... 317 413 430 441 458 468 483 493 503 513 523 535 545 555 565 575 585 595 605 615 625 635 645

Shipping Weight (Lbs.) ..... 552

GUARANTEE

Guarantee on Cabinet, Shelves, Trays and Accessories ..... 1 Year

Guarantee on Refrigeration System Only ..... 1 Year

Guarantee on Controls ..... 1 Year

Additional four years protection may be purchased for \$5.00 extra











## CONTINENTAL

Continental Corp., Fond du Lac, Wis.

Name of Manufacturer .....	22B	44S	66S	77S	77T	88T	111T
Model No. ....							
Exterior Cabinet Finish .....							
Interior Cabinet Finish .....							

Dulux

Porcelain

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) .....	2.11	4	6	7	7	8	9.5
Total Shelf Area (Sq. Ft.) .....	4.13	9.8	13.5	15.2	15.2	17.5	22
Number of Shelves .....	2	3	6	6	6	8	8

## CABINET

Overall Height (Inches) .....	35	49 1/4	55	58 1/4	58 1/4	62 1/2	62 1/2
Overall Width (Inches) .....	27	23 1/2	27 1/2	29 1/2	29 1/2	29 1/2	34 3/4
Overall Depth (Inches) .....	18	21 1/4	23 1/4	24 3/4	24 3/4	24 3/4	23 3/4
Number of Doors .....	1	1	1	1	1	1	2
Make of Insulation .....				Cellufoam			

## ICE CUBE TRAYS &amp; EVAPORATORS

Total Number of Trays .....	2	2	3	5	5	6	6
Number of Shallow Type Trays .....	2	2	3	5	5	6	6
Number of Deep Trays .....	..	..	..	..	..	..	..
Total Number of Cubes Produced .....	42	42	77	105	105	133	133
Total Weight of Cubes (Lbs.) .....	3.2	3.2	8.5	11.25	11.25	14	14
Evaporator Construction .....			Copper & Aluminum				
Finish of Evaporator .....			Retinned Aluminum				

## COMPRESSOR

Make of Compressor .....							
Location .....				Below			
Open or Sealed .....				Open			
Rotary or Reciprocating .....				Reciprocating			
Refrigerant Used .....				Freon			
Condenser Cooling Method .....				Fan			
(Fan or natural draft)							
Make and Type of Motor .....				Wagner (capacitor)			
Motor Horsepower .....		1/4	1/2	1/2	1/2	1/2	1/2
Compressor Speed .....	430	410	410	410	410	410	410
Number of Cylinders .....	1	1	1	1	2	2	2

## WEIGHT

Net Weight of Refrigerator .....	165	210	280	295	300	315	390
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## GUARANTEE

Guarantee on Cabinet .....							
Guarantee on System Only .....							

One Year  
5-Year Protection Plan

## COPELAND

Copeland Refrigeration Corp., Detroit

437	537	637	737	937

Dulux and Alchemik

Porcelain

4.29	5.79	6.55	7.1	9.01
9.33	12.15	14.53	15	17.4
3	4	5	4	5

53 1/2	55 1/2	58 3/4	58	61 1/2
23 3/4	27 1/2	30	30	32 3/4
22	24 1/4	25	26 3/4	28 1/2
1	1	1	1	1

Balsam Wool and Thermocraft

2	2	3	3	4
2	1	2	2	2
..	1	1	1	2
56	84	112	98	126
4 1/2	6	8 1/4	9	11

Copper Tube and Fin  
Metallic


Copeland

Below

Open

Reciprocating

Methyl Chloride

Fan


Delco, Wagner, Emerson

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4

1/4



## DAYTON & NIAGARA

Name of Manufacturer ..... Heinz & Munschauer, Buffalo

Model No. .... 4-E-2 6-E-4 7-E-6 9-E-8

Exterior Cabinet Finish ..... Porcelac  
Interior Cabinet Finish ..... Porcelain

### CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) ..... 4 6.23 7.18 9.3  
Total Shelf Area (Sq. Ft.) ..... 8.1 13.25 16.25 17.75  
Number of Shelves ..... 3 4 6 8

### CABINET

Overall Height (Inches) ..... 50 58 62 61 1/4  
Overall Width (Inches) ..... 22 1/2 30 30 30  
Overall Depth (Inches) ..... 21 1/2 23 1/2 23 1/2 23 1/2  
Number of Doors ..... 1 1 1 2  
Make of Insulation ..... Balsam Wool

### ICE CUBE TRAYS & EVAPORATORS

Total Number of Trays ..... 2 4 6 6 8  
Number of Shallow Type Trays ..... 2 4 6 6 6  
Number of Deep Trays ..... 42 84 126 168 168  
Total Number of Cubes Produced ..... 3 3/4 6 10 13 1/2  
Total Weight of Cubes (Lbs.) .....  
Evaporator Construction .....  
Finish of Evaporator ..... Tin Plate

### COMPRESSOR

Make of Compressor ..... Tecumseh  
Location ..... Below  
Open or Sealed ..... Open  
Rotary or Reciprocating ..... Reciprocating  
Refrigerant Used ..... Sulphur Dioxide  
Condenser Cooling Method ..... Fan  
(Fan or natural draft)  
Make and Type of Motor .....  
Motor Horsepower ..... 1/2  
Compressor Speed ..... 505 505 505 450 450  
Number of Cylinders ..... 1 1 1 2 2

### WEIGHT

Net Weight of Refrigerator ..... 250 335 415 450

### GUARANTEE

Guarantee on Cabinet ..... One Year  
Guarantee on System Only ..... One Year

## GAFFERS & SATTLER

Gaffers & Sattler,  
Los Angeles

775

Dulux  
Porcelain

7.5  
14.2  
4

60 1/2  
32 3/4  
24 1/2  
1  
Zerozell

4  
4  
93  
6 1/2  
Welded Steel  
Porcelain

Gaffers & Sattler  
Below  
Open  
Reciprocating  
Sulphur Dioxide  
Fan

General Electric (capacitor)  
1/4 320  
2 2

500  
One Year  
Five-Year Warranty

## GILFILLAN

Gilfillan Bros., Inc., Los Angeles

S-407 S-657 D-707 D-927

Dulux  
Porcelain

4 6.5 7 9.2  
9.1 13.5 14.33 18.16  
3 5 6 5

53 1/2 58 3/4 65 1/4 71  
23 3/4 30 33  
21 1/2 24 1/2 24  
1 1 1  
Balsam Wool

2 2 3 4  
2 1 2 2  
56 84 112 140  
5 7 1/2 10 15  
Continuous Tube  
Electro-Tin Plate

Gilfillan  
Below  
Open  
Reciprocating  
Sulphur Dioxide  
Fan

General Electric (capacitor)  
1/4 585 585 585 1/4  
2 2 2 2

280 370 430 530  
One Year  
Five-Year Warranty Plan



## GRUNOW

General Household Utilities Co., Chicago

Hostess Corp., Ltd.,  
Toronto, Ontario, Canada

53W 63W 58WD 67WD 68WD 68WSD 83WSD

Name of Manufacturer .....

Model No. ....

Exterior Cabinet Finish .....

Interior Cabinet Finish .....

Porcelain

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) .....

Total Shelf Area (Sq. Ft.) .....

Number of Shelves .....

## CABINET

Overall Height (Inches) .....

Overall Width (Inches) .....

Overall Depth (Inches) .....

Number of Doors .....

Make of Insulation .....

## ICE CUBE TRAYS &amp; EVAPORATORS

Total Number of Trays .....

Number of Shallow Type Trays .....

Number of Deep Trays .....

Total Number of Cubes Produced .....

Total Weight of Cubes (Lbs.) .....

Evaporator Construction .....

Finish of Evaporator .....

## COMPRESSOR

Make of Compressor .....

Location .....

Open or Sealed .....

Rotary or Reciprocating .....

Refrigerant Used .....

Condenser Cooling Method .....

(Fan or natural draft)

Make and Type of Motor .....

Motor Horsepower .....

Compressor Speed .....

Number of Cylinders .....

## WEIGHT

Net Weight of Refrigerator\* .....

## GUARANTEE

Guarantee on Cabinet .....

Guarantee on System Only .....

\*Weight for Grunow models when crated.

## HOSTESS

Hostess Corp., Ltd.,  
Toronto, Ontario, Canada

47 &amp; 46 57 &amp; 56 68

Lacquer

Porcelain

4.5 5.5 6.5  
9.5 10.8 13.6  
4 4 550% 54 57 1/2  
25% 28 29%  
25% 26 1/2 27  
1 1 1  
Hostess2 2 3  
1 1 2  
1 1 1  
63 63 84  
4 1/2 4 1/2 6  
—Electro-Tin over Copper—Hostess  
Sealed  
Rotary  
Sulphur Dioxide  
Natural DraftGeneral Electric (capacitor)  
1% 1% 1%  
1460 1460 1460One Year  
Three Years



# HOTPOINT

Name of Manufacturer ..... Edison General Electric Appliance Co., Chicago

Model No. .... 120EC41 120EC51 120EC61 120EC81 120EC71 110ED121 110ED151

Exterior Cabinet Finish ..... Glyptal or Porcelain ..... Glyptal ..... Porcelain

Interior Cabinet Finish ..... Porcelain

## CAPACITY (Nema Rating)

Net Food Storage (Cu. Ft.) ..... 4.2 ..... 5.2 ..... 6.1 ..... 8.1 ..... 7.1 ..... 12.5 ..... 15.4  
 Total Shelf Area (Sq. Ft.) ..... 8.4 ..... 10.9 ..... 12.2 ..... 16.9 ..... 15.1 ..... 22.7 ..... 31.3  
 Number of Shelves ..... 3 ..... 3 ..... 3 ..... 4 ..... 4 ..... 4 ..... 4

## CABINET

Overall Height (Inches) ..... 49½ ..... 53¼ ..... 56½ ..... 60½ ..... 60½ ..... 62½ ..... 62½  
 Overall Width (Inches) ..... 23½ ..... 27¼ ..... 29½ ..... 32½ ..... 29½ ..... 39 ..... 46  
 Overall Depth (Inches) ..... 24 ..... 24½ ..... 25 ..... 25½ ..... 25½ ..... 28 ..... 28  
 Number of Doors ..... 1 ..... 1 ..... 1 ..... 1 ..... 1 ..... 2 ..... 2  
 Make of Insulation .....

## ICE CUBE TRAYS & EVAPORATORS

Total Number of Trays ..... 2 ..... 3 ..... 4 ..... 4 ..... 4 ..... 6 ..... 6  
 Number of Shallow Type Trays ..... 2 ..... 3 ..... 4 ..... 1 ..... 1 ..... 2 ..... 2  
 Number of Deep Trays ..... .. 3 ..... .. 3 ..... 3 ..... 2 ..... 4 ..... 4  
 Total Number of Cubes Produced ..... 40 ..... 60 ..... 84 ..... 84 ..... 84 ..... 128 ..... 128  
 Total Weight of Cubes (Lbs.) ..... .. 6 ..... 8 ..... 11 ..... 11 ..... 14½ ..... 16½ ..... 16½  
 Evaporator Construction .....  
 Finish of Evaporator ..... Metal

## COMPRESSOR

Make of Compressor .....  
 Location ..... Hotpoint .....  
 Open or Sealed ..... Below .....  
 Rotary or Reciprocating ..... Sealed .....  
 Refrigerant Used ..... Reciprocating .....  
 Condenser Cooling Method ..... Sulphur Dioxide .....  
 (Fan or natural draft) ..... Natural Draft .....  
 Make and Type of Motor .....  
 Motor Horsepower .....  
 Compressor Speed .....  
 Number of Cylinders .....

## WEIGHT

Net Weight of Refrigerator .....

## GUARANTEE

Guarantee on Cabinet ..... One Year .....  
 Guarantee on System Only ..... Five Year Protection Plan .....



# ICE-O-MATIC

Name of Manufacturer	Williams Oil-O-Matic Heating Corp., Bloomington, Ill.										
Model No.	D3741	D3751	D3762	P3762	D3782	P3782	P37122	P37152	P37192		
Exterior Cabinet Finish	"D" Models—Dulux; "P" Models—Porcelain										
Interior Cabinet Finish	Porcelain										
CAPACITY (Nema Rating)											
Net Food Storage (Cu. Ft.)	4.3	5.4	6.2	6.2	7.5	7.5	11.5	13.1	16.8		
Total Shelf Area (Sq. Ft.)	9.9	11.3	14.8	14.8	17.3	17.3	28.5	33.3	38.6		
Number of Shelves	4	4	4	4	5	5					
CABINET											
Overall Height (Inches)	52½	56½	58¾	58¾	63	63	67¾	70	72		
Overall Width (Inches)	24¾	26¾	29	29	31¾	31¾	40	44	48		
Overall Depth (Inches)	24¾	24¾	24¾	24¾	25	25	26	26	27¼		
Number of Doors	1	1	1	1	1	1	2	2	2		
Make of Insulation	Balsam Wool										
ICE CUBE TRAYS & EVAPORATORS											
Total Number of Trays	2	3	4	4	6	6	4	4	5		
Number of Shallow Type Trays	2	3	4	4	6	6	4	4	5		
Number of Deep Trays											
Total Number of Cubes Produced	42	63	84	84	126	126	84	84	105		
Total Weight of Cubes (Lbs.)	4.27	6.41	8.54	8.54	12.82	12.82	11.2	11.2	14		
Evaporator Construction	Tin										
Finish of Evaporator	Tin										
COMPRESSOR											
Make of Compressor	Williams										
Location	Below										
Open or Sealed	Open										
Rotary or Reciprocating	Reciprocating										
Refrigerant Used	Methyl Chloride										
Condenser Cooling Method	Fan										
(Fan or natural draft)											
Make and Type of Motor	Williams (capacitor)										
Motor Horsepower	½	¾	¾	¾	¾	¾	¾	¾	¾		
Compressor Speed	450	450	300	300	300	300	410	580	580		
Number of Cylinders	1	1	2	2	2	2	2	2	2		
WEIGHT											
Shipping Weight (Approximate) of Refrigerator	320	355	390	445	450	515	850	940	1,000		
GUARANTEE											
Guarantee on Cabinet	One Year										
Guarantee on System Only	One Year										











# Retail Prices

## Coldspot

(Retail Installed Price)

Model	Net Cu. Ft.	Price
A7-704	4.22	\$ 99.50
C7-736	6.22	139.50
D7-716	6.22	155.00
D7-726	6.22	175.00
E7-718	8.59	175.00
D7-728	8.59	195.00

## Copeland

(F.O.B. Factory Prices)

Model	Net Cu. Ft.	Price
437	4.29	\$128.85
537	5.79	162.80
637	6.55	187.10
737	7.1	214.90
937	9.01	251.20

## Crosley

(Detroit Installed Price)

Model	Net Cu. Ft.	Price Open	Price Sealed
HL-43	4.3	\$.....	\$144.95
HL-50	5.03	.....	169.95
HL-61	6.1	.....	199.95
HL-71	7.1	.....	219.95
HB-30	3.0	99.50	104.95
HB-31	3.16	99.50	104.95
HB-36	3.6	109.95	119.95
HB-41	4.1	122.95	129.95
HB-50	5.07	139.95	149.95
HB-60	6	154.95	169.95
HB-71	7.1	184.95	199.95

## Electrolux

(Detroit Installed Price)

Model	Net Cu. Ft.	Price
H4 10	4.18	\$135.96
H 500	5.03	183.55
H 1100	10.94	356.09
H 600	6	215.44
H 800	8	251.53

## Fairbanks-Morse

(Retail Installed Price)

Model	Net Cu. Ft.	Price
DX-4	4.37	\$119.90
DX-5	5.14	154.90
DX-6	6.17	174.90
D-4	4.37	139.90
D-5	5.14	174.90
D-6	6.17	194.90
D-6-S	6.14	204.90
D-7	7.11	249.90

## Frigidaire

(Detroit Retail Price)

Model	Net Cu. Ft.	Price
D 337	3.1	\$113.00
DRS 537	5.1	157.50
DRS 637	6.2	177.00
DRS 737	7.2	207.00
Master 437	4.1	137.50
Master 537	5.1	177.00
Master 637	6.2	207.00
Master 737	7.2	231.50
Master 837	8.25	256.00
Deluxe 537	5.1	196.50
Deluxe 637	6.2	226.50
Deluxe 737	7.2	251.00
Deluxe 837	8.25	275.50
Imperial 37	13.5	393.50

## Grunow

(Detroit Installed Prices)

Model	Net Cu. Ft.	Price
53W	.....	\$149.50
63W	.....	169.50
58WD	.....	179.50
67WD	.....	219.50
68WD	.....	219.50
68WSD	.....	239.50
83WSD	.....	259.50

## General Electric

(Detroit Installed Prices)

Model	Net Cu. Ft.	Price
B4-37	4.2	\$139.50
B5-37	5.2	179.50
B6-37	6.1	209.75
B7-37	7.1	234.75
B8-37	8.1	259.50
JB5-37	5.2	159.95
JB6-37	6.1	179.75
JB7-37	7.1	209.75
M6-37	6.2	212.50
M8-37	8.2	269.50
PB6-37	6.1	229.75
PB8-37	8.1	279.50
K-12	12.5	425.50
K-15	15.4	526.50

## Gaffers & Sattler

(Retail Installed Price)

Model	Net Cu. Ft.	Price
775	7.5	\$224.50

## Hotpoint

(Suggested Installed and  
Delivered Price)

Model	Net Cu. Ft.	Price
220EB21	2*	\$ 90.50
120EB31	3*	117.50
120EB51	5*	159.95
120EB61	6*	179.00
120EB71	7*	209.75
120EC41	4.2	139.50
120EC51	5.2	179.50
120EC61	6.1	209.75
120EC71	7.1	234.75
120EC81	8.1	259.50
110ED41	4.2	162.50
110ED51	5.2	199.50
110ED61	6.1	229.75
110ED81	8.1	279.50
110ED121	12.5	425.50
110ED151	15.4	526.50

\*Approximate.



# Retail Prices

## Hostess

(Retail Installed Price)

Model	Net Cu. Ft.	Price
46	4.5	\$189.00
47	4.5	199.00
56	5.5	229.00
57	5.5	246.00
68	6.5	275.00

## Kelvinator

(Detroit Installed Prices)

Model	Net Cu. Ft.	Price
SD7 37	7.04	\$334.50
SD9 37	9.20	394.50
SD13 37	13.12	544.50
SD17 37	16.79	694.50
PK5 37	5.16	196.95
PK6 37	6.13	228.50
PK7 37	7.19	252.50
PK9 37	9.2	299.95
K4 37	4.15	137.50
K5 37	5.16	177.00
K6 37	6.13	208.50
K7 37	7.19	232.50
K3 37	3.16	114.00
KS 50	5.16	157.95
KS 60	6.13	177.95
KS 70	7.19	208.50

## Leonard

(Detroit Installed Price)

Model	Net Cu. Ft.	Price
LS 50	5.16	\$159.95
LS 60	6.13	179.95
LS 70	7.19	199.95
L3-37	3.16	114.95
L4-37	4.15	139.95
L5-37	5.16	179.95
L6-37	6.13	209.95
L7-37	7.19	239.95
P5-37	5.16	207.95
P6-37	6.13	239.95
P7-37	7.19	274.95

## Norge

(Detroit Installed Prices)

Model	Net Cu. Ft.	Price
P52-37	5.24	\$199.50
N52-37	5.24	179.50
P42-37	4.25	159.50
L42-37	....	139.50
LTP 122	12.25	464.50
LTP 81	8.08	364.50
P81-37	8.08	299.50
N81-37	8.08	269.50
P72-37	7.22	264.50
N72-37	7.22	244.50
P61-37	6.12	229.50
N61-37	6.12	209.50
S72-37	4.24	209.50
S42-37	4.24	134.50
S62-37	....	179.50
S52-37	....	159.50

## O'Keefe & Merritt

(Retail Installed Price)

Model	Net Cu. Ft.	Price
437	3.7	\$119.50
537	5.4	139.50
376	6.2	159.50
377	7.3	189.50

## Stewart-Warner

(Detroit Installed Price)

Model	Net Cu. Ft.	Price
457	4.5	\$139.50
557	5.64	179.50
657	6.3	197.50
567	5.64	199.50
667	6.3	219.50
767	7.4	239.50
867	8.1	269.50
567-P	5.64	219.50
667-P	6.3	239.50
767-P	7.4	269.50
867-P	8.1	299.50

## Universal

(Landers, Frary &amp; Clark)

Model	Net Cu. Ft.	Price
S4	4.2	\$124.50
D5	5	159.50
D6	6	189.50
D8	8	259.50

## Universal Cooler

(Suggested Retail Price)

Model	Net Cu. Ft.	New Price
D537	5.23	\$139.95
D657	6.51	154.95
D757	7.46	179.95
PD 65	6.51	169.95

## Westinghouse

(Detroit Installed Prices)

Model	Net Cu. Ft.	Price
FDS 30	3.2	\$113.00
FDS 40	4.0	137.50
FDS 50	5.0	177.50
FDS 60	6.0	207.00
FDS 70	7.0	231.50
FD 50	5.0	192.00
FD 60	6.0	227.00
FD 70	7.0	251.00
FD 92	9.2	274.50
FPS 50	5.0	196.50
FPS 60	6.0	226.50
FPS 70	7.0	251.00
FP 92	9.2	294.50
EPX 135	13.5	529.70
EPX 200	20.1	629.50
FS 50	....	157.50
FS 60	....	177.50
FS 70	....	207.00

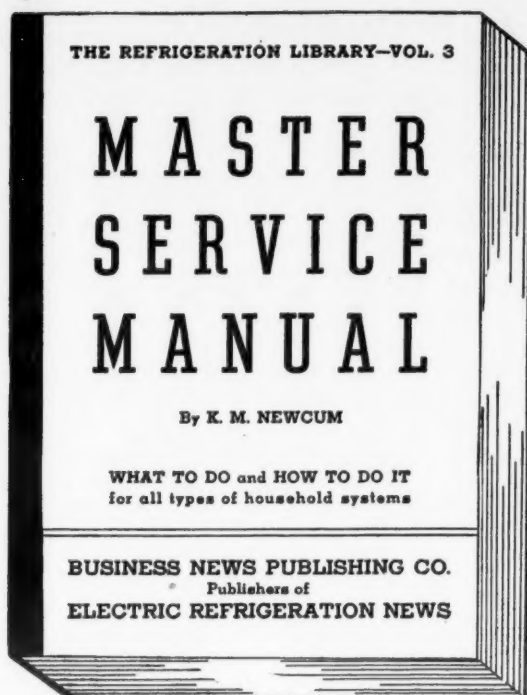
## Zerozone

(Retail Installed Price)

Model	Net Cu. Ft.	Price
W-437	4.12	\$128.50
W-537	5.2	162.80
W-637	6.3	187.10
W-837	7.62	220.00



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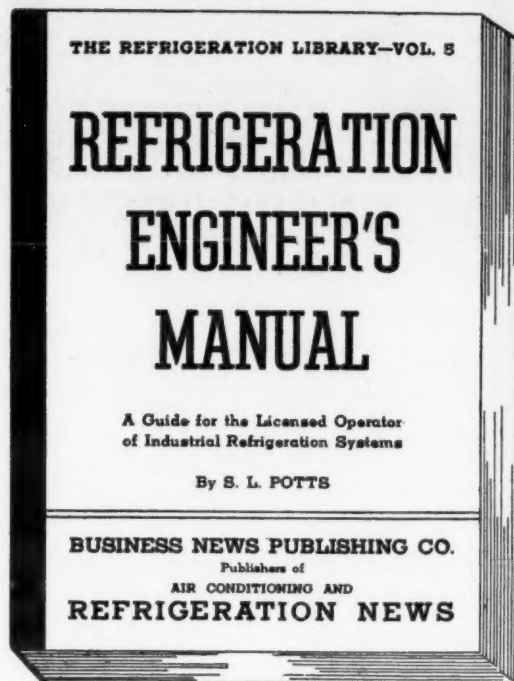
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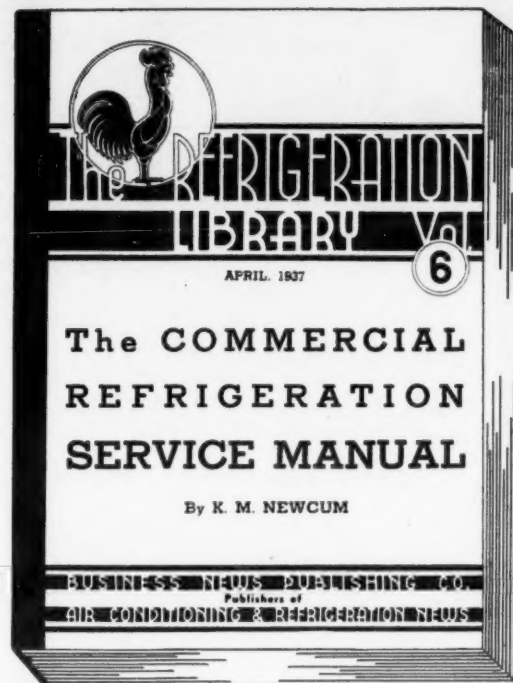


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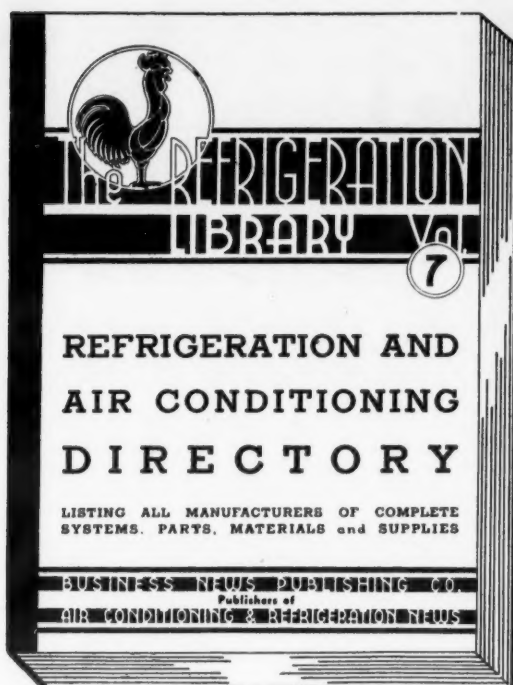
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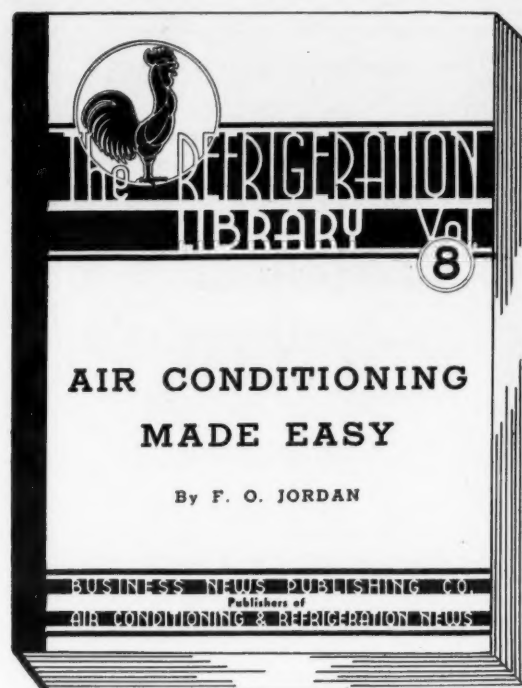


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